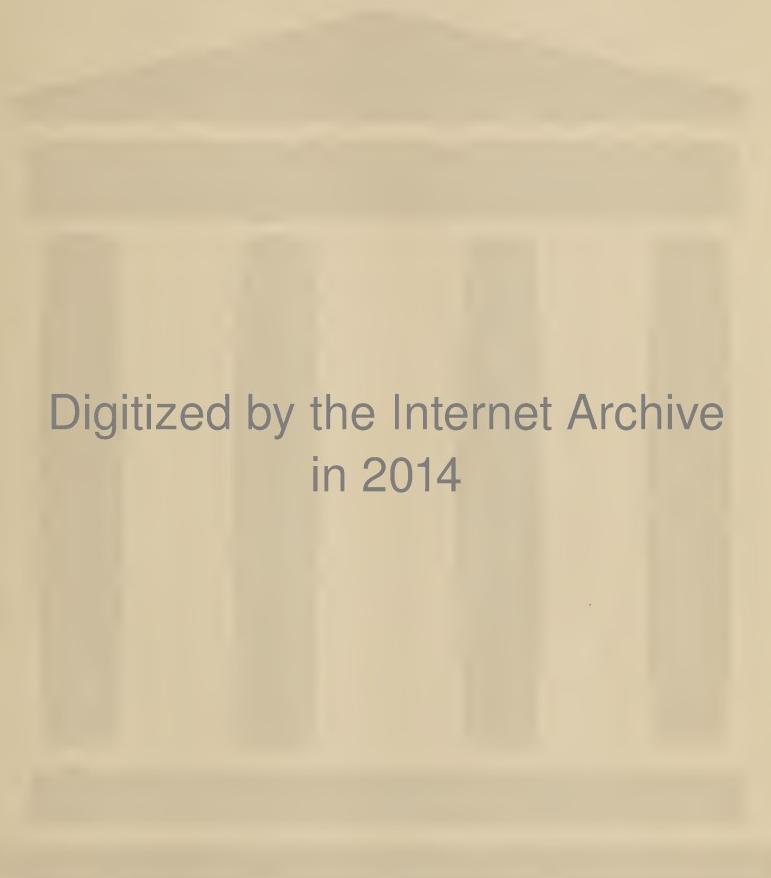


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JOURNAL

OF THE

Michigan Schoolmasters' Club

FORTY-FOURTH MEETING

Held in Ann Arbor, March 31, April 1, 2, 3, 1909

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Michigan Schoolmasters' Club

PROCEEDINGS OF THE FORTY-FOURTH MEETING HELD AT
ANN ARBOR, MARCH 31, APRIL 1, 2, 3, 1909

EDITED BY THE SECRETARY

GENERAL MEETINGS

The forty-fourth meeting of the Michigan Schoolmasters' Club began on Wednesday, March 31, with meetings of the Classical and Historical, Modern Language, and Physiography Conferences. The paper, "The Making of Michigan," read by Clarence M. Burton of Detroit at the Classical and Historical Conference, reviewed some points in the history of Michigan not generally known. It is published in full in the proceedings.

The paper, "Peter White as Man and as Citizen," read by Hon. Levi L. Barbour, of Detroit, is to be published by the Board of Regents and will be sent to the members of the club.

The Conference of Physiography held its first meeting this year and proved so interesting and profitable that action was taken to make the Conference a permanent part of the club.

The general meetings of the club were held on Thursday and Friday mornings in University Hall. Thursday morning was given over to the teachers of English. Papers were read by Professor J. F. Hoscic, of the Chicago Normal School, Professor F. A. Manny, of the Western Normal School, and Professor Laura J. Wylie, of Vassar College, New York. Friday morning the topic for discussion was: The Meaning of Heredity. Professor George D. Strayer, of Columbia University, spoke upon one phase of the subject, i. e., "In how far and in what way is it true that the child is born free?" Professor C. B. Davenport, of the Carnegie Institution of Washington, spoke upon another phase—"In how far and in what way is it true that the child is bound by heredity?" And Professor R. M. Wenley, of the University of Michigan, spoke upon the phase, "What

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special hopes do the facts of heredity offer for education?" All of these papers will be found to be interesting reading for the members of the club.

On Thursday night Professor W. B. Scott, of Princeton, gave an address upon the subject of Evolution.

On Friday night an address was given by Professor L. W. Sprague, of Ethical Culture School, New York, upon the subject, "Myths and Legends." In this address Professor Sprague showed the great value of the story in a child's life. That character can be better formed by asking the child to recall certain stories than can be formed by less human methods so often used. The club is sorry that it could not get the manuscript of this most admirable address for publication.

The different Conferences held their meetings on Wednesday, Thursday, Friday and Saturday and were largely attended.

On Thursday another Conference—Drawing—had its birth and makes the tenth one to become a permanent part of the club. The program of this and other Conferences can be found in the last part of the Journal.

The plan adopted by the executive committee of admitting teachers to the meetings of the club by badge or ticket proved to be an excellent thing. Not only did the teachers enjoy the meetings better for having paid their full share of the expenses, but they also increased the membership roll two-fold. This will enable the club to obtain good speakers and more of them for its meetings.

On Saturday morning the fourth symposium on the Value of Classical Studies was given and reprints of it will be sent to all members of the club. Reprints Nos. 1, 2 and 3 will be sent to any address upon receipt of a two-cent stamp for each reprint.

Some of the pleasant features of the meeting were the annual supper of the alumnae of the University of Michigan given in Barbour gymnasium, the young ladies' classes in gymnastic drills and basketball game, the organ recital given by Mr. H. W. Church of the School of Music, and the reception given by Professor and Mrs. Kelsey. All in all, the meeting was by far the largest and best in the history of the club.

THE BACKGROUND OF THE CERTIFICATE SYSTEM.

PROFESSOR FRANK A. MANNY, WESTERN NORMAL, KALAMAZOO, MICH.

The college entrance problem is a part of the social movement of the day. To an increasing number of people this larger movement is seen at its best in democracy or a common sense balance between the tendencies which may be characterized negatively as exclusiveness and indiscriminate leveling, and positively as distinction and uniformity. In our smaller problem the same general forces appear.

A few years ago President Eliot went to New York to deliver two educational addresses. In one he showed to the satisfaction of many that the best line of advance in college entrance determination will continue to be by examination resulting in the selection of the members of this important social group by methods which would reject those who could not or would not conform to a certain set of arbitrary tests. In the other address he showed the folly of such a system when applied by labor unions and resulting in the closed shop.

Whatever later adjustments may come, the certificate system has been thus far the most important tool used to re-form the situation. The fact that this method has proved itself serviceable to the extent it has is significant of the need there was for it. The merits and demerits of the case have been discussed extensively, but the essential gain has been that there has come with it increased freedom together with the recognition of a larger unit in which the secondary schools and the colleges have mutual responsibilities. The state university has been the chief means of promoting this more effective organization and even the Harvard professor recognizes and states the advance. Professor Royce, at the Baltimore meeting of the American Association, indicated that a quarter of a century in service at Cambridge had only shown him more clearly that the social relationships of the state university furnish the type which is bound to influence with increasing success the older institutions. Some years ago Professor Palmer in an address at Cleveland on "The Glory of the Imperfect," gave us perhaps the most valuable statement that has yet been made of American education as a distinct organization of sufficient definiteness to be a tool in contributing to world improvement.

It is this "glory of the imperfect" that is the distinguishing feature of America's contribution—the fact that products are only valuable and significant as parts of processes and consequently are at their best only materials for further advance. The aristocratic element marked by the advance in organization is only one factor, while the other factor, serviceableness in further advance, is of equal importance. The segregation and isolation of products, whether in the form of resources, wealth, culture, art or piety, result in a lack of circulation and a consequent hindering of

progress. The testing of a situation tends to take account of what one has rather than what it will lead to. The cost of an inventory of this kind is so great that it can only be afforded once in a lifetime. Logically this great event should come at the end of the student's schooling, but the university has contented itself with the coarser screens of honors and pass men, *cum laude* and *summa cum*. If the finer shot has been sifted out in a senior wrangler, the larger numbers in the other class have realized their compensations. The German examination at the close of the nine year secondary course has best illustrated this devotion to products and the work has suffered for it. I have seen many instructors in mathematics in that country dictating demonstrations and solutions to students because with the pressure for accumulation to be tested later it was felt that the student must not be permitted the hazard of a single mis-step. It is not strange that at one of the universities I was told that for courses involving any consideration of mathematics as a means to further growth the gymnasial student must in many cases begin over again when he entered the university, for the impeding habits of accumulation must be gotten rid of before he could see mathematics as a tool of science. Again it is not strange that in these schools the laboratories were almost as fresh after several years of nominal service as they were on the day of opening.

In the days of the assaults of the barbarians upon the treasures that Rome in church and state had gotten control of, it is not strange that an educational ideal should have become prominent which was dominated by the notion that education consisted in keeping intact and passing on the spiritual acquisitions which became more precious as they were seen to be endangered. Nor is it strange that the methods used in handling these came to be recognized as the only habits which had the transferability requisite to disciplining the youth. It was logical that every addition to the curriculum forced upon the school by society came in time to be subjected to a considerable extent to these methods and these tests. This was true of the Greek and Roman life brought in by the humanists for it became our disciplinary grind to acquire the most tangible and measurable of the products of that life—the languages. Mathematics suffered the same "sea-change," so that the average student in America never gets into the swing of the larger mathematics because more formal aspects are more measurable. Modern languages and the mother tongue have gone through the mill and the natural sciences show that they can lend themselves to the same exactions. Even manual training in set exercises and domestic science in recipes as governors rather than as working hypotheses have often followed the course.

But today we are in better condition than ever before for next steps. The program of Professor Scott for English reform, that of Professor Mann for advance in Physics, the Perry movement in Mathematics all seem to show that the isolation and consequent wasting of resource products is passing. This segregation at its worst was modified when Matthew

Arnold called for the teaching of products as the results of processes even though he could not see the educational possibilities of participation in the processes themselves. One does not wonder at this when he goes into the laboratory and finds students so swamped in details and in doing that they have no time or energy for meaning and functions. To be lost in the process is as bad as to take the product second hand. Neither is necessary, we are coming to see, and both represent forms of that early specialization fatal to the continuance of growth which are equally reprehensible in the form of child labor, trade instruction at too early an age, or specializing in skill in jumping college fences.

One chief reason for the larger social inclusions indicated by the certificate system, the recognition of the products—culture—the classic—as stages rather than as ultimates has been the development of modern science with all that goes with it. Three stages can be seen in this movement. Early man like the other animals when he met a difficulty must hazard too often all that he had upon the issue. This was the stage of brute experience and the result was often death. The chance successes led to better organization and consequently more effective psychical functions and the method of theory came to stand out. Education went over to this and repudiated its former connection with practical experience. Theories, deductions, products were so significant that they were counted all significant. In recent years the laboratory has marked a third stage in which man can try on a problem physically without running the risk of losing his all. There is sufficient control so that he need no longer be a partisan in the theoretical-practical controversy but can employ both tools in safety, working upon conditions especially prepared to meet the issue involved, recognizing the value, the superiority, of his result without losing sight of its indebtedness to the whole and the necessity of using it in the next step in the process that never ceases to proceed.

Just as the school wisely went over to the method of theory and deduction as soon as that stage could stand for itself, so today we see the transition of that institution to the laboratory point of view and as an important outcome of the second stage was an extraordinary advance in freedom of thought, so we may reasonably expect that the present forward step will greatly facilitate freedom of action.

What are some of the immediate lines of development which come to us as definite opportunities and responsibilities on account of the progress marked by scientific organization? One of the first results from any removal of restraint is the chance to breathe more freely. It cannot be denied that some schools when put upon a certificate basis enjoy this opportunity to the full and unless there is outside prodding the chance for breathing space results in sound sleep. The tendency is also seen to take it for granted that because the examination system is so badly misused the reducing of examinations to a minimum is the best means of advance. Probably one of the greatest needs of our schools from the kindergarten up is

more adequate testing. I shall not attempt to suggest detailed methods but rather to urge principles.

1. Each stage will profit by careful testing of a kind appropriate to its development.

2. However distinct a stage may be in its needs, the adequacy of the test will depend to a great extent upon the consideration given to it as a member of a larger group—thus much of the inspection of secondary schools today is narrow and tends to limit growth.

3. One of the most important means of testing is that which gets at the actual working of the school and studies the institution in operation in a given situation.

4. This testing is dual in two respects: (a) it requires conscious attention at times from those intimately within the situation, the teachers and I believe to an increasing extent the students; (b) also from those whose range includes wider view—principals, supervisors, superintendents, inspectors, school men from other school situations and men from social situations beyond the school. The second division from another angle requires: (c) experts in the particular fields represented in our curriculum; (d) also experts in organization and administration whose main interest is in the relationships rather than in the differentiations.

The difficulty in most attempts at reform has been that one or another of these needs has been seen and an attempt has been made to meet it without taking account of the other equally important factors. The necessity of the fourth section, the expert in relationships instead of in mere specialization, was well illustrated in the case of a girl who because of poor health and large wealth had occasion to come in contact with an unusual number of specialists. In the course of an ordinary gymnasium examination it was found that she had suffered for several years from spinal curvature. It had never occurred to her parents to take her to a spinal specialist and the others to whom she had been taken saw nothing but their own specialties. In the school the most conspicuous instance of this large view of situations in operation is the work of Dr. Michael Sadler in England. He has accomplished this end so effectively that the possibility and usefulness of the method has been well demonstrated.

Contributory to this is the development just beginning of more reasonable records and reports. The work at Columbia and in the Commissioner's office at Washington promises that in a few years the school will come within sight of the methods used by our best organized industrial institutions. These are by no means adequate as is shown by Mr. Fagan's article in the March Atlantic. I have recently, however, known something of the operation of two complicated situations directed by graduates of the University of Michigan. One is probably the largest franchise problem in the world, the other a most complicated traction difficulty. The expert methods applied to make these matters intelligible would give us, in the case of the school, material upon which we would be able to build with

some intelligence. One reason why there is money available for these purposes is that the men have shown that they know how to use it better than we have shown in what we have done.

The movement toward medical inspection will receive more attention in secondary schools when responsibility is better placed. I recall the case of a young woman of college age whose poor work baffled teachers and parents alike. During a second interview following a conference with her father at which nothing developed, I went to work upon physical questions and finally said, "You need not drop any work or go back into another class as has been proposed. I prescribe a hot dinner each day." The prescription was carried out and there was no further difficulty in the case. All of us have experiences like this but we fail to take them as indications of the need of expert organization in the directions they suggest.

With the increased freedom of action we must work for less provincialism in teachers and pupils. I had occasion recently as an exercise in psychology to work with a class of strong students who were high school graduates. Our problem was to see what ideas in history the students had control and use of. I managed the matter as skilfully as I could, and as an outcome on the most tangible side, that of dates, there were only two furnished by the pupils which were not connected with Michigan or other United States history. It is not that they knew too much United States history, for they would have known more had they been aided to see it in its world relations. When students have little opportunity for expertness in what is worth while they develop it elsewhere. I had occasion to inspect a private school last year and was much impressed by a nineteen year old boy who, when called on in an English class to discuss some problem in the Ancient Mariner, looked at his teacher, a poet of standing, with an aggrieved expression, "You forget, Miss ——, that I am going to Princeton, and we do not need the Ancient Mariner there." Have you ever noticed that excellently concrete putting of the disciplinary-functional issue by the train boy who gives us the alternative, "Sandwiches or chewing gum"?

I had occasion to discuss a high school boy's program with him. He was older than the average boy and had had some business experience. I had recommended that he do some of his preparation on Saturdays, organizing in some cases the main lines of a week's work or more. He listened patiently and then said, "In every instance my lessons are given to me day by day—slice by slice. I never have a chance at the loaf to cut for myself." It is this need for opportunity to take responsibility for materials, methods, and perhaps most of all for results—the chance to fall or to succeed under conditions which the boy himself had a hand in organizing and which have range enough to give him a chance at a long view. A recent German work on experimental pedagogy states that certain will factors need greater stressing in education—interest in success, the sense that success is possible, the will to improve. It is upon this line that the

diciplinary conception has its best foundation. The old issues as to whether virtue can be taught or there is a transfer of ability or function will never be dead. Mind consists in function out of one situation carrying over with another. Our problem is to aid in forming educative situations which have enough in them that something does carry over and serve elsewhere or, to state it in another way, a student defined secondary education as the period in which youth tries all his enthusiasms and finds the permanent.

The effect of this problem attitude will be revolutionary or at least reconstructive. I found an instance of this where I least expected it, in a technical school in one of the Italian cities. The equipment was excellent, the instructors were of high grade, each shop and laboratory had a well-trained assistant in charge all the working hours. True to my program habits, I asked how many hours a boy spent in this, that or the other laboratory, shop or studio each week. My guide, who was thoroughly at home in English, had difficulty in understanding me. At last he grasped what I meant, and said: "He spends in each the time that he needs for his problem. This week it may be more time in the physical laboratory and next week more time in the shop. The work rooms are here, we start him upon a piece of work, then he uses the equipment and the professors as he needs them." "But," I said, "does that work with boys of twelve?" "Yes, why not?" was his answer. Perhaps one of our greatest needs in this day of freer action and experiment in school matters is to ask and answer more often in relation to our work and the customs and habits it is set in those rational questions, why and why not.

THE EXAMINING BOARD AND ITS FUNCTIONS.

PROFESSOR LAURA JOHNSON WYLIE, VASSAR COLLEGE.

The problems with which American teachers have to deal are rapidly changing. For almost two generations we have been perfecting a great educational system, and faith in its efficacy has meanwhile been our watchword and inspiration. In its name we have built schoolhouses, instituted short and easy methods for the training of teachers, devised theory upon theory and curriculum upon curriculum. We knew, to be sure, that our school-system bore more than a fanciful resemblance to our flimsily built houses and to our unsafe and ugly railways; but the work we had to do was rough work, and, in spite of its incompleteness and wastefulness, we were justly proud of our achievements. But this spirit of satisfaction has of late been rudely disturbed by the indictments brought against the results of our labor. From superficial kindergarten to superficial college, our education, say the critics, fails to educate. The workmen and work-

women who leave our lower schools for factory or store show the failure of one part of our educational system to give real training as plainly as the Rhodes scholars suggest the weakness of another. The demands of practical life have, in fact, far outgrown the provisions of our teaching, and, if our schools are to remain an integral part of our social order, we must by some means train our pupils to a greater efficiency, thoroughness and adaptability than is at present possible. In the face of such criticism we are forced to turn our eyes from the means with which we are working to the ends for which we aim; from the machinery which we have delighted to invent to the culture which is the sole object of its creation. It is through knowledge of our end and possession of the culture we are trying to impart—and through such knowledge and such culture only—that our still over-mechanical educational system can be made vital and functional; it is only thus that real can be substituted for formal and academic training.

The end of all our training is the fuller life of the generations of boys and girls that pass from our schools; the end of all association among teachers is to provide such conditions of teaching as allow for this training. Simple and obvious as are these statements, they form the only basis for a profitable discussion of the function of an examining board, as well as the only ultimate test of its value. The primary object for which the Board was formed was the establishment of a system of examinations, which, by simplifying the work of the schools and colleges, should bring order out of the chaos that ten years ago still reigned in educational matters. The Board was, it is true, not a pioneer in establishing the order which was then the most necessary condition of sound education. The first, and by far the most important step in this direction was taken in 1894 when uniform requirements for entrance to college were formulated. But in spite of this notable advance, the educational anarchy that prevailed through the '80s and early '90s was still general at the time when the Board began its work. This was indeed the natural outcome of the period of transition then drawing to its close. In less than a generation all knowledge had been forced on school and college by an enthusiastic public, and the necessity of allowing freedom of election was transforming their whole discipline. This widening of the subject-matter of teaching was, moreover, effected through teachers who had to work in conditions allowing only for a hap-hazard application of new ideas, and who were thus very largely unwilling instruments of a change that perplexed when it did not antagonise them. The enforcement of a common course of study in such circumstances made the situation in some particulars even harder than it had been before; for while it immensely simplified the problems of the teachers as a whole and brought about much closer relations between the schools, it forced backward schools to an immediate advance for which they were poorly prepared and made such requirements as remained,—the odd theorems in geometry or the additional Latin prose that had passed unchallenged in a time of general confusion,—doubly irritating because superimposed on an

accepted, and supposedly rational course of study. To make the order that had been secured practically effective it was necessary to determine what the accepted requirements meant as well as what they were; and to this end the Board was appointed to substitute a single uniform entrance examination for the scattered and apparently unreasonable ones of the various colleges. It was believed that the Board examinations once established, the schools might pursue their work in a spirit of relative quietness and the colleges build on broader as well as securer foundations.

The first work of the Board, then, was the substitution of a single examination and a uniform standard for many varying individual requirements, the substitution of order for the confusion of aim, the perplexity as to means and the reckless spirit of experiment which were the signs of a half-accomplished revolution. But the establishment of order was but the beginning of its work; its most important function consisted in its power to disseminate ideas through its constituency by enforcing certain conceptions and standards of scholarship. For the Board was instituted to deal collectively and co-operatively with problems that had bankrupted the resources of individual teacher, school and college, and the order that it established was developed from within, not imposed from without. Its merely negative function, the freeing of energy from the friction of constant adjustment, was thus naturally supplemented by its power to serve as a medium of communication between its members, and so to disseminate the ideas falling within its sphere. For bringing these ideas to bear on the practice of the teachers concerned and so truly popularising them, the Board is eminently fitted. Its first and perhaps its greatest qualification for this work consists in the practical nature of its task. It is its province to deal with thought in application, and it is thus forced not only to give up those vague generalities that conceal so many fundamental differences in theory and practice, but to occupy itself with the solution of problems every one of which demands the widest experience and the best knowledge of many of its members. And it is the easier for the Board to utilise this experience and knowledge because it is a truly representative body acting for a relatively small number of people, all vitally interested in the questions under discussion and able to contribute to that discussion the results of their own experience. Its position too is relatively independent, as it at once lies outside the realm of direct political influence and is free from that immediate responsibility to its patrons which so largely offsets the political independence of the private school and the inadequately endowed college. And lastly it is fortunate in that its members approach the discussion of very similar problems from superficially opposing points of view. Differences in the age of their students and in their divergent social affiliations do much to conceal from teachers naturally preoccupied with their own particular fields, the common ground on which secondary school and college meet. Yet they are alike concerned with those middle years when our more favored children spend the leisure of a prolonged infancy in

preparation for a relatively liberal way of life; and so are especially interested in the maintenance and re-establishment of that disciplinary and selective training the ideal of which has survived the downfall of the narrow education in which it developed.

It is of course impossible to outline any definite plan by which the Board may perform its twofold function; the enforcement of order and the dissemination of ideas that will make that order effective; to do so would be to write a chapter in the history of teaching for the next dozen years. But though we cannot forecast its future action, it is necessary, if we are to coöperate with it intelligently, for us to understand the difficulties with which the Board has immediately to deal and the means at its disposal for dealing with those difficulties. There can be little doubt that our besetting danger—more, our besetting sin—is that faith in the machinery of our profession which has to a great degree destroyed our faith in its spirit and our knowledge of its substance. William Morris laments the decline in the power and sense of workmanship that has accompanied the modern struggle for spiritual and social enfranchisement. Bernard Bosanquet says that we stand today at the threshold of the long "Dark Ages" of culture; that whereas we of the present generation have mastered the form of knowledge we are still strangers to its substance, and that that substance can be assimilated only by a long effort, similar to that by which the Middle Ages made the substance of Christianity a part of European thought. These criticisms on the failure of our age to make its vision real are well illustrated by the condition of the teachers of English. We know the vocabulary of our trade—very seldom it is our profession—but are unskilled in the trade itself; are learned in pedagogy, untaught in teaching; we outline the plot of the story under the spell of which we have never fallen, or teach the history of a literature that we have hardly read. There is no lack of testimony as to these particular faults of ours. Scholars and writers alike condemn our ignorance of the subject we teach. Educational experts declare that we are failing to train speakers, writers and readers of English, or explain this failure by our attempt, again due to ignorance, to apply to the subject-matter of English the methods of classic study. The intelligent layman, the parent who constantly sits in judgment on the teaching of his child, says that we destroy the taste and interest we pretend to develop. A letter signed "A Teacher and a Mother" that recently appeared in the *New York Times* put the case strongly. A boy of thirteen who had learned to love Shakespeare by seeing the plays acted and hearing them read returned from school one day, saying, "We are going to take up the study of *The Merchant of Venice* now in our class. Let's read it together quickly before I learn to hate it." These witnesses from without are supported by many teachers, sincere lovers of books and scholars in the art of literature, none of whom is better entitled to speak on the subject, or has spoken to better purpose, than Mr. Percival Chubb, of the Ethical Culture School in New York. He says: "What we need

for the improvement of English teaching is a broader, richer, more thorough literary training and culture for our teachers, with a schooling in the principles of rhetoric and criticism so concrete and practical that they may know and feel good literature when they see it." In these words is definitely stated the charge brought more generally, but not less severely, by outside critics; "culture and literary training," "concrete and practical schooling," knowledge so thoroughly assimilated that it has been transformed into power, is perhaps the most fundamental need of those who are today teaching the English mother-tongue to Englishspeaking students.

But it is less profitable to talk of these matters in the large than in relation to the specific tasks of the English teacher. Of these the teaching of writing is the most universally accepted, the most definite, and the one brought most constantly to the test of practice. Does the teaching of writing show failure in concrete and practical knowledge of principles and in the literary culture that insures the rightness of our critical perception? Current theories on the subject are commendably sound. We agree that writing should be correct and as forceful as the pupil can make it; that its excellence depends on the interest of the writer, on his grasp of the subject and on such mastery of technique as is necessary for the expression of the idea. We discuss the psychology of our subject, talk glibly of the relationship of thought and word, insist in season and out that matter is more than manner and practice better than theory. But, when we turn from precepts to prevailing practice, we find that very many of our words have been mere stock phrases, the sounding brass and tinkling cymbals of professional cant. For the proof of our teaching lies in the power of our students to meet the emergencies in writing that come to them whether in or out of the class room; in their ability at least to say plain things plainly, to communicate, however obvious their experience, real things to real people. But this power is still a rare asset of training in English, where a barren, formal correctness and a formlessness that apes abundance flourish side by side in almost all our classes. And among the many reasons for this state of affairs we must reckon our own failure to apprehend vividly that unity between thought and word which is the first article of our pedagogic creed. Of this failure our practice gives too evident proof. There can be no question that the speech and writing of the English teacher, even though without a touch of higher art, should show the workmanship of the craftsman; that our speech should be clear and pithy, our letters simple and direct, the text-books that we write coherent, compact and lucid. Yet we are admittedly poor in these virtues, though they are only the natural outcome of knowledge made truly one's own. The evil of example, so much talked of in this respect, is perhaps the most subtle and far reaching result of our failure to transform theoretic knowledge into practical power. But the direct effect of this half-assimilated knowledge on our teaching is hardly less deplorable than the indirect, since without mastery of subject-matter we can never attain the rectitude of judg-

ment which can alone help the student to knowledge of himself and of his work. It is my official duty now and then to read the papers of students with a view to estimating the work of their teachers. In nine cases out of ten where the writing of the students is insincere, artificial or pretentious, there are evident signs, sure to be confirmed by investigation, that their teachers were imposed upon by high-sounding phrase and empty form; that they delighted in "that mixture of a lie" which Bacon counts so large an ingredient of pleasure. These blind and ignorant judgments appear at times most ludicrously in the practice and precept of our students: as in the case of a freshman, insincere and stilted in writing beyond hope of cure, who justified herself by exclaiming, "Why, so and so is the best English teacher in my state and she wrote 'perfectly lovely' on every one of my compositions"; or again, in that of her fanciful friend, who justified her effusive and unreal prettiness against all critics by declaring that she had imagination; and imagination she briefly explained to be the power to see things that are not so. Such extreme incarnations of wrong teaching are happily very rare; yet they are hardly fewer than the students trained to clearness of perception and expression by teachers who infallibly know the right word and the wrong whenever and wherever they see it, and who have the power to lead the young writer along the lines of this preception.

Our failure to develop real power to write in our students vitiates not only our teaching of English but the whole moral and intellectual value of that teaching. It is in the nature of things that every sentence worth writing embodies a new thought, that the student who thinks—and we have failed utterly if the student does not think—has at the best to win clearness through attempts that are necessarily awkward and embarrassed. Nothing but training in the real sense of the word is here of the least avail; and our best training must often fail to stand the test of working out the new idea or meeting the new situation. Every advance in the student's thinking must be marked by formal imperfection in writing until he has learned to be a tolerable critic of his own compositions. By making him such a critic, however, we have not only equipped him with power to express his growing thought, but have sharpened his perception, disciplined and clarified his reasoning, given him some sense of honest workmanship. English teachers may not be able single-handed to cope with the forces in our national and educational life that make for superficiality, but they can at least insist that in one field work be well done, and so refuse to confound still further the reigning confusion.

With the teaching of reading, the second specific task of the English teacher, the case is worse than with the teaching of writing, since here we are barely coming to a verbal agreement as to the end for which we are working. Literature is, comparatively speaking, a newcomer in the school curriculum; and, between the devotees of a cheap emotionalism on the one hand and the vendors of minutely annotated texts on the other, has fared so badly that we are not yet quite sure of the ground on which

we justify its presence. There can be no question that we must ultimately teach literature for what literature is, that the training given by it must be the specifically literary training. Now the peculiar function of literature is neither to satisfy a vague aesthetic appreciation, as the sentimentalists would have us believe; nor to give such scientific training as is demanded by those who apply to its study classical methods or those imported directly from the university; it is rather, by conveying to the reader the great thoughts and feelings that have been brought within the sphere of genuine human experience, to arouse his interest, enlarge and refine his sympathy and develop his power of thought. The training of literature is seen by the masters of literature to be no less severe and no less vital than that given by mathematics or science. In an interesting passage in the *Biographia Literaria* Coleridge testified to the value of the training in literature given by the Master of Christ's Hospital, far otherwise immortalised by Charles Lamb. It is suggestive to note that his lessons on Shakespeare and Milton, studied in connection with the Greek tragic poets, were those that "required most time and trouble to bring up." Nor does Coleridge leave any doubt of the nature of this teaching. From Boyer he learned that poetry has a logic of its own "as severe as that of science; and more difficult, because more subtle, more complex, and dependent upon more and more fugitive causes." This logic he traced out, too, in the words and phrases of the great poets as well as in those of his own school compositions, showing how in them it controlled not only the choice but the position of every word. But though we have long been familiar with these principles, we have seldom insisted upon their application; and, failing frankly to accept literature in its own right, have been hopelessly perplexed as to the aim of our teaching. Even what we should read is still almost a moot question. We agree to accept the limitations of that boy and girl nature with which we have to do, but, uncertain whether we are guiding it, hardly know whether to give it the books that it actually likes or those that we think it ought to like, too often forgetting in our vain discussion that it is the teacher's first business to educate,—to develop and sometimes almost to create,—those sympathies which open the life of the imagination even to the younger and duller of our school children.

This lack of understanding as to the peculiar promise and peculiar discipline of literature naturally vitiates much criticism of the books required for reading and study, their difficulty or unfitness being proclaimed with small sense of the end for which they should be used. If I may appeal to the experience of one college, the books required for entrance are not too many or too difficult. A large number of the schools that send us pupils do much more than the required amount of reading, a few using the required books rather as a point of departure in the study of literature than as an end in themselves. In recent freshman classes at Vassar as many as one student in ten has had in her preparatory school a course in literature so full and thorough that she is permitted to

elect the more advanced courses without the year's study of English which is ordinarily pre-requisite to them. It may be worth noting too that the Academic Registrar of the University of London thinks that English children between the ages of eleven and sixteen or seventeen should be able to study not only the poets but the great modern prose writers, sometimes through complete works and sometimes through a prose anthology. But though the amount of reading might probably be increased rather than diminished, there can be no doubt that the wider choice of books allowed after the present year by the National Conference is from every point of view most desirable. We all know how large a part personal sympathy bears in the teaching of English. Lack of sympathy with the Augustan temper bars most teachers from giving any but the most superficial idea of Augustan literature. Within three years I have known of two teachers who found it impossible to teach *Heroes and Hero-Worship* effectively to college freshmen because of their dislike of Carlyle's point of view on some subjects; and this winter I discovered a high school teacher who declared it torture to teach *The Ancient Mariner* because she could not endure the poem. For better and for worse there is in English no such accepted material for study as in mathematics or the sciences. We should not expect a personal feeling about fractions to modify the teaching of arithmetic or an aversion to dissecting the frog to change the requirements of a course in biology. Yet individual appreciation counts for so much in English that we must rejoice at the chance for greater freedom given by the new requirements. Whether Burke's *Speech on Conciliation* is a wise entrance requirement or not, it will never reach its end with teachers who consider it, in the language of one of them, "a mighty juiceless study for the average boy or girl."

Far more serious than our lack of agreement as to what and how much we shall read is our failure to define how the books that we do read are to be studied. For the appeal of a great book is wide, and, if its meaning can be approximately grasped, is likely to touch even the untrained reader. But this meaning is often so hopelessly dulled or distorted by a wrong approach that any essentially unliterary teaching of literature is to be deprecated whether it be teaching by exclamation or by grammar and dictionary. If literature is the expression of those human interests that appeal to men as men, the real reader is he who follows the thought of the writer from beginning to end of story or poem or essay. Such reading, which traces the thought through every phrase, involves the study of technique as truly as does the attempt of the writer to express his own idea, and, substituting a real for a formal study of language, demands the most delicate perception of the expressive power of words. Such study, too, puts an end to all harsh divisions in subject-matter and methods of training, whether it be between the methods of the grammar school and the high school or between the books set for reading and those set for study. If

the end of our teaching is to make our students real readers there can be no break in their developing comprehension of literature, no carelessness at the beginning and no pretentiousness at the end of their course. It is interesting to note here that the examination now suggested by the National Conference markedly demands increased power of the writers. The writing of a longer theme, the relating of the books to the students' other studies and to their outside experience will compel a more truly literary appreciation of the books set for study.

Lack of sound scholarship, so evident in our teaching of writing and reading, is, it is true, only one of the difficulties that the English teacher has to meet. Low salaries with the consequent lessening of opportunity; crowded classes, with their inevitable routine teaching; ill-coöordinated curricula with incalculable waste of effort on the part of both teachers and pupils,—these conditions not only demand immediate remedy but turn numbers of high-minded young men and women from a profession hedged in by so many limitations. These obstacles in the way of sound teaching must be overcome in great part by the perfecting of that machinery for which we still keep our inherited enthusiasm; but if the changes that are so necessary were made tomorrow, there could be no fundamental improvement in our condition unless our teachers brought to bear on their teaching a thoroughly concrete and practical knowledge of their subject. "Our machine-made teachers," says a writer in the March (1909) *Atlantic*, "are, by machine methods, making of our splendid boys and girls, each one stamped with the divinity of individuality, mere machines." Even though no part of our educational system may be quite so mechanical and superficial as Mr. Orth declares our public schools to be, it is undeniably true that only genuine scholarship and thoroughness of training can animate our educational machinery, and make it a means—the great means—for the development of individual power. While, moreover, many of the defects in our system lie entirely outside our power to mend, our lack of scholarly equipment, of skill to use the tools of our trade, can be partially met by efforts from within. We are not ignorant because of the dearth of knowledge. The problems which are perplexing us have been solved again and again. We have a good working theory for the teaching of English and innumerable suggestions of particular devices by which certain ends may be attained: such, for instance, as the use of the audience to get clear and vital writing, or the value of acting as leading to an understanding of Shakespeare's plays. Neither can time and opportunity be lacking to our pupils; we have at least established a system by which the end that we do not always know may be attained. Many examples, too, point out the way that we should follow. France and Germany have succeeded in giving their school children considerable knowledge of literature, and one of them at least turns out excellent writers. Best of all there are in our own country some schools and many teachers who have worked out satisfactory courses and are getting excellent results from their

students. Cardinal Newman said that at a certain period of his life what still remained for his conversion "was not further changes of opinion, but to change opinion itself into the clearness and firmness of intellectual conviction." In like manner what remains for us to do is not to come into contact with new sources of knowledge, but to master the knowledge that we actually have. Material in plenty lies ready to our hand; our need of it is declared by a cloud of witnesses; our next step must be to transmute into substance that form of culture which is already in some measure our possession.

In such a state of affairs our great need is the maintenance and enforcement of a reasonable standard of excellence, a standard that, commanding itself to our best intelligence, must yet still further educate the intelligence it represents. And this must be regarded as the primary function of such a body as the College Examination Board, a function very similar to that of an academy as conceived by Matthew Arnold. It is the business of an academy, says Arnold, "to give the law, the tone to literature, and that tone a high one." The work of the board is humbler, but, if possible, more fundamental than that ascribed to the academy; it is its business to give a high law, a high tone, to the teaching of literature; and thus to help form that individual taste and power which are the foundation of any national literature. A recent writer says that examinations are "irrational as guides, indispensable as tests." But while our universal human nature is shared by teacher and pupil every test must become to a great degree the guide of those who are to be tried by it, a guide as to the end they must reach if not as to the way by which they must go. We all know with what deadly weight poor examination questions or a meaningless requirement rests on the spirits of teachers and pupils. One of a little group of teachers was this winter explaining to her companions the plan for a minutely detailed study of Irving's *Sketchbook*. "But why do you spend so much time on that?" was the general exclamation. "Wouldn't the class do better with a more general study of the book?" "It's ridiculous," was the answer, "but what is to be done after the June examination paper questions?" Mr. Wilson Farrand lately began a criticism of the demands of the colleges with the answer of a school principal to a father's question: "You do not suppose I am educating your son, do you? I am preparing him for _____ College." We hear on all sides of the evils worked by the wrong kind of examination and but seldom of the good influence of the right examination. Yet the rational test is as potent for good as the irrational for evil. If a misplaced demand for knowledge, falsely so called, can force for a time a dry-as-dust method on many schools, the demand for real knowledge not only allows independence to those who want it, but in the last issue forces freedom on the many who without compulsion would never dare accept its responsibility. For it is, after all, a superficial test that compels one-sided and irrational study; that sanctions a formal, pseudo-scientific method on the one hand, or an

empty facility on the other. The test that makes for real training must demand real power and real knowledge; the ability to write well on a new subject and a subject requiring thought, and knowledge of literature as over against knowledge of the facts with which literature deals or the tools with which it works. Its aim must be to test ends while leaving the utmost possible freedom as to the means by which these ends may be reached. That the Board has no directing but only an exacting power is a real advantage in reaching its end. "If the government would make up its mind to require for every child a good education, it might save itself the trouble of providing one," said John Stuart Mill not many years ago. The simplification of machinery, the emphasis on ends as over against means, remarked by Mill as a result of the division of functions in the powers enforcing and providing education, allows the best opportunity for the enforcing power to focus attention on the ends to be attained, and to demand that those ends be attained in at least reasonable measure.

But if the College Examination Board has singular opportunity to enforce the best ideas of its constituency, its higher usefulness must be the price of constant vigilance. It has the weakness as well as the strength of a body at once democratic and administrative. The papers set by experts in their particular subjects are criticised and revised not by other experts, but by the assembled members of the Board, who in this capacity may be said to represent both the average good sense and the general educational policy of the whole body; the papers written by the students are judged by approved teachers, who bring to their interpretation varying standards and viewpoints. It is easy to see that, while a body thus composed allows for almost infinite interchange of ideas, it may readily become the prey of what may be called the administrative fallacy; a preference for uniformity rather than excellence, and an acceptance of facility in disposing of work as equivalent to the excellent doing of it. We have it on good authority that the way of the transgressor is hard. But administrators are too likely, by ignoring that law of undistributed middle, dear to many of us besides Mr. Crothers, to infer that all hard ways are the ways of the wicked. Yet all experience of examination boards would show that the policy of encouraging a mechanical ease leads to a complacency and facility that are the foes of true thought and of true progress. This besetting failing of the administrator is in the case of the Board reinforced by the besetting weakness of any democratic society; an easy content with mediocrity. Every one who has had charge of any examination knows the heavy weight of the average school, which always moves along the line of its own least resistance. Public opinion as brought to bear on the Board is likely to be on the side of an easy uniformity. The standard of the Board is naturally a matter of indifference to the excellent schools whose pupils pass examinations by a wide margin, but of vital importance to the poorly equipped teachers whose fate may stand or fall by the success of their pupils. It

is just here that the responsibility of its members to the general work of the Board is most important. The weak or mediocre school is sure to be an influence in its determinations; and it is right that the difficulties and perplexities of the less happily situated teachers should be carefully weighed. But if the Board is to be a real power in education, to represent progress rather than stagnation, to further initiative rather than merely to yield to convention, it can be only through the disinterested efforts of those who have much to give to its councils.

THE MEANING OF HEREDITY IN EDUCATION.

In how far and in what way is it true that the child is born free?

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This is preëminently the century of the child. Our belief in the efficiency of education, our concern for the proper care and training of children is one of the most striking characteristics of our modern society. Perhaps we have been inclined at times to overstate the power of education. Those of us who have been engaged in the work of training children may have found it necessary to modify, somewhat, our theories in the light of our experience. Probably no one of us is able to adapt his work to each one of his students in such a way as to insure the maximum of result in growth and development in each one of the individuals under his instruction; but, however this may be, none of us doubts that the boys and the girls with whom we work differ in ability. This difference in ability is, however, measured in terms of the results which our schools are organized to secure. Possibly the pupils whom we consider dull or backward have marked ability in directions which concern us little and for which no provision has been made in our schools as at present constituted. In reply to our statement that they are not fit for the school, these pupils might well answer that the schools are not fit for them.

We hear much today about equality of opportunity for each child. Modification of the curriculum, physical education, moral training, special types of schools, compulsory education, and the elimination and retardation of school children, are among the problems most commonly discussed by educators. The question which we are to discuss today is significant for one who would attempt to solve any of the problems suggested. Indeed, one may say that these problems can be solved only in the light of our knowledge of the meaning and significance of heredity.

Briefly put, the problem which we are to consider resolves itself into a question of the relative importance of nature and of nurture in determining the achievement of the individual. In this part of the discussion we are

to inquire concerning the degree in which the child's endowment at birth renders achievement normally possible. When we ask in how far and in what way the child is born free, we are concerned simply with the possibility of accomplishment for the individual under the most favorable conditions. In the terms of this discussion we must measure the freedom of the individual not by what he actually does in the world, but rather by what he might have done had the conditions for growth and development been ideal. On no other basis can we compare individuals or argue concerning the extent to which natural endowment is efficient in determining the later activity of the individual.

It will be well, too, at the very outset to define what we mean by achievement. There must be some standard of worth, some norm which we apply in measuring the individual's activity. The only satisfactory standard is that which we can accept as the aim of our work in guiding the child in his growth and development. Whether or not we accept the philosophic doctrine which declares that the individual finds his life in losing it, we are nevertheless forced to admit the validity of the claim which society makes in demanding that education shall end in social efficiency. Freedom for the individual means the possibility of contributing in some measure to social welfare. The highest individual development is possible only through participation in social activity; the measure of a man's achievement is found in his participation in activities which make for social progress. With these definitions in mind (1) that freedom is to be defined as the possibility of achievement under ideal conditions, and (2) that we understand by achievement the individual's contribution to social welfare, we are ready to ask: In how far and in what way does the child's endowment at birth indicate freedom?

It shall be my endeavor in this part of the discussion to present a positive rather than a negative argument. I shall try to indicate the facts which show clearly the freedom of the child. We shall inquire first of all concerning the characteristics of the period of infancy. What is the child's native equipment? What are his latent possibilities? What tendencies are prominent in infancy? What changes in growth and development are brought about by nurture? To what degree is the child modifiable? One is tempted to cite also the facts of heredity in order to inquire concerning the validity of the interpretation which has been given to these data, but my colleague in this discussion in indicating the degree to which heredity limits the child, will, by implication at least show to what extent the facts of heredity are compatible with the claim of freedom which this paper presents.

If we were to try to indicate in a single statement the freedom of the child, we would say that the child is born with the capacity for development, physical, mental, and moral, which will place him at least upon an equality with the adults with whom he finds himself. These possibilities of achievement seem infinite when compared with the equipment of the

child at birth. It is not only that development takes place but that this growth is relative to the situation in which the child finds himself and leads to the greatest variety of activity. This difference between the child and the man becomes striking, if we compare development from birth to maturity with the differences which exist among adults. The difference between a new-born child and a man of ordinary intelligence is many times greater than the difference between the ordinary man and the genius from whatever point of view we observe them or by whatever standards we measure their activity. Of course, it may be argued that children are born who do not have strength enough to keep them alive; and that others seem to have little or no possibility of mental growth. Even if we admit that this is true, the fact remains that the overwhelming majority of children are born with a tendency to health both physical and mental. It is with this great majority that we are mainly concerned, and for them the statement that nature has endowed them with possibilities of a great variety of achievement will not be questioned. Even among those who are notably defective, we have discovered possibilities of training which have led to self support at least.

The possibility of the physical growth and development of children has only recently been appreciated. There was a time when witches were supposed to kill, when disease and death were looked upon as special dispensations from above, or when tuberculosis was supposed to be inherited. The striking thing is that as our knowledge of the elements in the environment inimical to the child and of the proper care of children has increased the number of those who have survived has steadily increased. One can easily imagine that the death rate among children today under the most favorable conditons may seem appalling to the enlightened people of a later century.

But it is not simply the tendency to persist which characterizes the child. More wonderful is his ability to adapt himself to his environment,—the infinite variety of muscular adjustments which he can make. Most children can be taught to catch a ball, write with a pen, run, ride a bicycle, shoot, read, skate, operate a typewriter, throw, use a scythe, jump, dance, strike, sew, and so on in seemingly endless variety. When new demands arise, when occupations demanding a new type of muscular adjustment or control are introduced, we have no difficulty in training children to meet the new situation. The child's physical inheritance leaves him free to make such adjustments as his environment demands.

The tendency to mental growth and development and the possibility of modifiability is not less striking. Even if it be admitted that the extreme upper limit of ability is determined by heredity, the possibility of development rather than the limit is the striking characteristic of childhood. Inheritance, carefully defined, may indicate a probability of achievement, but this may not be interpreted to mean that the child is not free in the sense that he may not achieve more if properly nurtured than he will if neglected or oppressed.

If we inquire concerning the physical basis of mental life, the emphasis will fall upon the possibility of variation rather than upon the limiting nature of the child's inheritance. It is a well established fact that the neurones are present at birth but that the connections are yet to be established. The nature and variety of these connections are in some measure determined by the experience of the individual. There can be no doubt but that the connections established among the neurones of the central nervous system in any individual will be greater or less as the experience of the person is varied or limited. It is this modifiability of the central nervous system which constitutes the possibility of learning. Take the familiar illustration of the child whose first reaction on seeing fire is to reach for it but who soon learns to draw away from it. The connections which at first existed among the sensory and motor neurones which caused the child to reach for the fire are superseded by connections which lead him to avoid it. The neurones form connections, break them, and substitute others. The possibility of growth and development is inherent in the nervous system, and the character of these changes is not predetermined but depends rather upon the experience of the individual.

But it may be argued that the direction in which modifications may occur is determined by the inherited tendencies, that the child's instinctive equipment determines precisely the kind of reactions which we may expect. Upon closer scrutiny one is impressed with the fact that instinctive equipment does not imply definite limits. The child acts always with reference to the situation in which he finds himself. Certain of the instincts soon cease to be important factors in his development because of their tendency to produce results which are painful. Again the instinct which shows itself in one type of action may be utilized as the basis for a very different kind of response. The fact that any particular kind of activity whether physical or mental is acquired slowly;—we speak of a tendency to react,—that it is possible to train the individual to react in a great variety of ways in adapting himself to his environment; that we can even train a child to react in a way that is contrary to his natural tendencies, all indicate the measure of the child's freedom.

Implied in what has been said concerning instinctive equipment are the ideas of plasticity and of docility. These concepts are so familiar in modern educational literature that little need be said beyond showing their application to the problem in hand. The child is wonderfully impressionable. Change his environment and you change his language, his habits of thought, his standards of worth. He is flexible and this flexibility enables him to adjust himself without much waste of energy to sudden and unusual changes in his environment. He profits by his past experience. What he does today in any particular situation is determined by his experience of yesterday, of last week, of a year ago, indeed by all of his past life. He is not merely a creature of impulse controlled and limited by his native tendencies, but rather he is characterized by intelligence.

Moreover the child of today can profit and does act in the light of the experience of men who lived before his time. His elasticity or variability in action is not limited by his own experience alone. He starts where the race has left off. We do well to recognize the function of education in bringing him into possession of his spiritual inheritance, in order that he may effectively participate in the social activities of today. We no longer believe in the inheritance of acquired characters, but we know that the child is so constituted that during the period of infancy,—the period of plasticity,—we may hope to have him gain not simply the knowledge which his direct ancestors may have acquired but also we may hope to have him become familiar with the great contributions to social progress by men of all times. It may be argued that social heredity is constantly limited in its application by the capacity or ability of the individual to assimilate knowledge. In reply, it may be suggested that the average school boy of today may know more of science than the greatest scientist living a thousand years ago. One might dwell upon the possibilities of enlightened activity which are due to this freedom which is the heritage of the child and upon the corresponding importance of nurture.

Another phase of the child's endowment calls for special attention. Not only is the child able to profit by his own experience and by that of the race, but he is also by nature active, full of energy, insistently alert wherever he is placed. Call it self-activity, restlessness, curiosity, or whatever else you will, the significant fact is that he is characterized by this tendency to imitate, to act, to inquire, to investigate, whatever the situation. Apparently this ceaseless activity cannot be explained wholly by external stimulation. There is a spontaneity which characterizes especially the child which makes for variation. His habits of thought and action are not fixed. That this spontaneity is of the greatest importance in education none will deny. We cannot impose our education upon children, but we can remove obstacles to development. We can provide stimuli, we can guide, we can furnish a worthy environment, we can suggest, we can aid the child in the process of habituation, but we may not ignore the fact that growth and development are from within. Even when we would instruct the child, we recognize our limitations. Except as we bring about a tension in his experience,—discover to him a problem the solution of which is at this time vital to him,—we cannot make him think. This again means variation, or freedom, in the sense in which we are using that term in this discussion.

In the moral field, too, the possibilities of achievement are present. Children are born neither moral nor immoral but rather unmoral. Growth in morality is just as natural as is growth in the opposite direction. Once intelligence enters, the child is put in a position where he must choose. There are few today who would subscribe to the doctrine of a predetermined tendency to immorality. Indeed, the most ardent advocates of the importance of heredity reluctantly admit the importance of the environment in producing moral qualities. It would seem that the possibility of moral

growth and development for the child is quite as great as is the possibility of physical or mental achievement.

But it is not enough to indicate in this general way the possibilities of achievement due to inheritance. We must inquire concerning the factors which determine or control achievement aside from the natural equipment. If it is true that children are born with the possibility of contributing to social welfare,—free in the sense that they are not bound to react in any fixed way,—it is none the less true that the achievement of individuals is greatly influenced by the situations in which they find themselves. If it is true that heredity sets certain limits beyond which the individual is unable to attain, it is equally true that men of equal ability are very unequal in the contribution which they make to social wellbeing. It is distinctly a part of our problem to inquire concerning the factors which limit or control achievement.

Lack of achievement is not necessarily due to lack of ability. Tarde was right when he pointed out the fact that the environment may represent opposition. The only cases in which we have a right to say that achievement represents the true ability of the individual are those in which the environment has been most favorable, and even in these cases allowance must be made for the imperfection of our judgment concerning that which is favorable. Ward in his applied sociology, using as a basis for his argument the data collected by M. Odin concerning French men of letters, has indicated very adequately the elements in the environment which exercise a controlling influence. It may not be out of place to indicate briefly the argument which he advances.

Following in the main the results and arguments of M. Odin, he finds four elements in the environment, or four classes or kinds of environment which mainly determine the possibility of achievement: these are (1) the local environment, (2) the economic environment, (3) the social environment, (4) the educational environment.

In the case of local environment, the investigations show the importance of city life. It is in the city that the facilities for intellectual growth and development are found. It is in these centers of population that men are brought into contact with their peers and their superiors, with the result that they are stimulated to greater achievement. None of us do our best unless we are able to measure ourselves with others who are working along the same lines. It is the contact of mind with mind that brings out the best there is in a man. It is not enough to claim that men of genius seek the stimulating atmosphere of the city. These are in a very significant manner made by the opportunity which is there afforded.

On the side of the economic environment the favorable situation is contained in a word or two. One must have means, for it is this equipment which gives one a chance to devote one's self to investigation and research. Economic independence makes possible the instruments which are used in carrying on such work. Surely no one would deny the fact that men of

ability have been killed both mentally and physically by the stress of the economic conditions under which they have labored. There have at times been men wise enough to see the advantage of rendering economically independent the man of genius in whom they have taken a personal interest. But all too often the most competent men have been hampered and harrassed by economic insecurity, or still worse, have given up an impossible struggle. We are beginning to recognize the fact that it is uneconomical to kill children by hard work in order to swell the fortune of some individual. Society is beginning to be conscious of her wealth in these immature individuals and to protect her interests against the non-social individual who would exploit her resources. We are almost ready to recognize the fact that society's greatest asset is the child.

The social environment is important in the first place because it is closely correlated with economic independence, and secondly because of the self-confidence which social position tends to impart. We all recognize the difficulty which confronts the young man who comes from a class that is considered inferior. His companions are apt to sneer at him, the men from whom he should receive help and encouragement do not know him or else tend to ignore him. He lacks the confidence which characterizes the youth whose social connections are good and from which he constantly receives the suggestion of possible achievement. Before we can claim that the possibility of achievement is determined at birth we shall need to take the children from the lower social strata and provide them with social connections which stimulate to the highest endeavor. Only then can we realize the wide distribution of genius.

Education offers the possibility of acquaintance with many lines of endeavor. It provides the youth with the tools of investigation and inquiry. The boy whose education is prolonged has a chance to discover his peculiar aptitudes and abilities. Without education achievement is well nigh impossible. It is difficult to imagine a man contributing notably in the fields of science, or art, without a very good education. Education means intellectual freedom, the negation of bigotry and superstition, the chance for the stimulus which comes from thinking over the great things which men have thought and done in the world.

There is another element in the environment which is of surpassing importance. It may be thought of as composed of the elements already enumerated plus the elements of social demand, and of the previous achievements of men which constitute the present social situation. The belief in this factor of the environment in an extreme form is presented by Taine in his contention that the literary genius is a product of his time. A saner statement probably views the genius as impossible under conditions which were less favorable. We have a good example of this argument concerning the importance of opportunity in Lowell's essay on Shakespeare. He says in part:

"Had Shakespeare been born fifty years earlier he would have been

cramped by a book-language not yet flexible enough for the demands of rhythmic emotion, not yet sufficiently popularized for the natural and familiar expression of supreme thought, not yet so rich in metaphysical phrase as to render possible that ideal representation of the great passions which is the end and aim of Art, not yet subdued by practice and general consent to a definiteness of accentuation essential to ease and congruity of metrical arrangement. Had he been born fifty years later, his ripened manhood would have found itself in an England absorbed and angry with the solution of political and religious problems, from which his whole nature was averse, instead of in that Elizabethan social system, ordered and planetary in functions and degrees as the angelic hierarchy of the Areopagite, where his contemplative eye could crowd itself with various and brilliant picture, and whence his impartial brain,—one lobe of which seems to have been Normanly refined and the other Saxonly sagacious,—could draw its morals of courtly and wordly wisdom, its lessons of prudence and magnanimity. . . . What we mean when we say Shakespeare, is something inconceiveable either during the reign of Henry the Eighth, or the Commonwealth, and which would have been impossible after the Restoration."

It has been claimed by some sociologists that the social demand determines the type of genius that we find in any society. When society places a premium upon creative work in art and music, we get artists and musicians, i. e., men of ability show their ability in this direction. On the other hand, in an age like our own where the rewards are mainly for those who achieve success in organization of business enterprise or in exploiting the natural wealth of the country, genius shows itself in business, engineering and the like. Only a situation demanding mechanical skill produces an Edison, only a great war produces a Grant, only a literary age produces a Shakespeare. The environment may accept or reject, nurture or destroy the man of genius.

But why all this discussion concerning the importance of environment? Mainly this—the possibility of achievement on the part of any individual is not merely a function of his ability. Even the genius may be suppressed. You may kill physically the child whose contribution to human welfare would far exceed the achievement of one who is carefully nurtured. The genius as we know him is a man of great ability who has had an opportunity. The fallacy of the doctrine of the irrepressibility of genius is found in the fact that by the very nature of things only those who succeed are considered. We cannot know of the men of genius who have been suppressed, the men for whom the element of opposition in the environment has been greater than they could overcome. It has been argued that the genius cannot be hid, that he will assert himself, and yet we know that men of genius have very frequently lacked the element of aggressiveness which would be necessary in overcoming serious obstacles of an economic sort. From the work of Galton and others who have followed him it is argued that the probability of achieving renown is much greater for the son of a man of great ability

than for the average individual, but this does not prove that genius may not be very widely scattered, and that it fails to become apparent only because of untoward circumstances. If the environment may be a determining factor for the genius, how much more important it must be for the men of less endowments.

It is this element of stimulus and of opportunity that it is the particular function of education to provide. As far as we are concerned, even though we admit the very wide variability in native capacity, the problem is not altered. All of the children have possibilities of development and it is ours to provide the conditions most favorable for this growth. If children differ, if the possibility of achievement is not equal in any two children with whom we deal, all the more are we responsible for a careful study of the individual child and for an attempt to make such provision as will render his growth along the line of his special aptitude most certain. It has been said that democracy tends to mediocrity, that the result is a levelling down instead of a levelling up. If this be true it is an indictment of our education. We have been so much concerned in recognizing the freedom of all children that we have tended to overlook the genius and have failed to stimulate him to the highest endeavor.

If we view the problem from the standpoint of the doctrine of evolution, we are forced again to recognize the freedom of the child. From the very beginnings of society men have labored for the common good. Progress is the result of the power of the individuals composing society not only to maintain the existing social structure but also to further consciously the evolutionary process. If there has been progress it is because each generation has been free to transcend its inheritance. The striking thing is that our animal inheritance is modified and checked in its functioning. As intelligent beings we adjust these tendencies to reaction to the changed conditions which confront us. There is struggle; the conditions of social life demand restraint, reconstruction, and readaptation. We accept certain social ideals; we are governed in our activity by social approval and disapproval. It may be argued that there is always present in the process of evolution a force working for righteousness, but when conscious evolution enters, man chooses to align himself with this spiritual principle. He is free to achieve morality not because the necessity for struggle ceases but rather because he chooses to place himself in harmony with those forces which are making for progress.

In summarizing it may be helpful to inquire briefly concerning the achievement of the great majority of those who reach adult life. What men and women of today are doing is an indication of the freedom which was theirs at birth. Not that achievement is a complete measure of endowment. There are few who would be willing to claim that they had accomplished all that was possible. There are those who have been severely handicapped by unfavorable elements in their environment. But we can at least

claim that we have a partial measure of freedom in the actual accomplishment of men.

First of all, these men of today have preserved their own lives. Their native equipment has made it possible for them to survive under a great variety of circumstances, and, for many of them, in an environment which swarms with the enemies of human life. The fact that men have been unable to withstand the ravages of disease under radically new environmental conditions is not so remarkable as is the fact that in time, through the survival of the most fit, the race has become practically immune, free in the sense that it can achieve physical health and vigor under conditions once seemingly impossible of conquest. It is not that immunity from disease is inherited, but rather that natural selection operates in producing a race of those who are strong enough to overcome the adverse conditions. Added to this element of survival is the knowledge of hygiene, of medicine, and of surgery, which it has been possible for these men to acquire and which has been used in combating elements in the environment inimical to human life. These two elements, the natural tendency to persist and the ability to profit by the past experience of the race in preserving life, constitute one aspect of man's freedom and are the bases of the possibility of achievement which characterizes him.

These men have not only lived, they have worked. Their freedom has made possible achievement heralded abroad as epoch making in the history of civilization, perhaps, or they have done the work which is not acclaimed but which is none the less necessary. There have been relatively few who have been unable because of lack of ability to establish themselves in vocations worthy of their best efforts. They have been above all adaptable. They have done the work which the situation in which they found themselves demanded. The freedom of man is measured by human progress.

But life is not all work and men are by nature so constituted that they demand leisure. We associate commonly with the ideal of leisure the possibility of culture in the best sense. Children are born able to grow in power of appreciation of the nobler things of life. There is no normal man or woman to whom growth in power to appreciate literature, art or music is denied by inheritance. It is true that other interests may crowd out these nobler elements of experience, it is possible that physical exhaustion coupled with a lack of a stimulating environment may mean the neglect of the most worthy pleasures, but this does not indicate a native lack of capacity nor deny the possibility of achievement along these lines.

It is not claimed that achievement in all directions is equally possible for all individuals. Differences there are, and they must be recognized. It has developed, as we have inquired concerning the freedom of the child whether physical, mental, or moral, that in each case we have been compelled to emphasize the fact of the possibility of achievement. Children are plastic, docile, and modifiable. The great majority of men and women are born free to achieve much more than they actually accomplish. Children

for the purposes of education are born free not to become alike but rather to become different. Our difficulty has been often that we have not individualized the child sufficiently: we have not provided the environment which has brought out the best that there was in him. Our child is free to become something of everything, but he ought to become a factor in the social well-being of the group in which he lives because he has been wisely guided and stimulated in some one line of activity.

In conclusion it may not be out of place to say that our modern society believes in the freedom of the child, has confidence in his power to contribute his share to social well-being. Indeed the main thesis of this paper might have been the universal belief in the modifiability of the human being. We might have concluded our survey by claiming that the proof of our hypothesis concerning the freedom of the child was found in the existence of facts that could not otherwise be explained. The philanthropic, reformatory, religious, and educational institutions with which our land abounds are evidences of this belief and of the validity of our claim. We are coming to believe more and more in the child and in his possibilities. We have confidence in opportunity for growth and development and are skeptical of the value of repression. Men everywhere are beginning to recognize the fact that the hope of progress for humanity is found in the education of the little child.

IN HOW FAR AND IN WHAT WAY IS IT TRUE THAT THE CHILD IS BOUND BY HEREDITY?

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I hold in my hand some millet seeds from the same parents and some violet seeds from the same parents. I have here two pans of earth, A and B; A being a rich loam and B a nearly pure sand. I plant in pan A some of the millet seeds and some of the violet seeds and in pan B some of the millet seeds and some of the violet seeds. The millet seedlings that sprout in A are different from those that sprout in B; that is environment. In both pans A and B the millet and violet seedlings are easily distinguishable; that is heredity. You may make the conditions in A and B as unlike as possible, compatible with germination—yet in both the general differences between millet and violet seedlings are maintained and they are readily distinguishable. Heredity seems stronger than environment in determining the result. The question of the relative importance of heredity and environment is, however, special for each species. Among bacteria environment seems to be the chief determiner of form; among the higher animals and plants it is heredity.

What is heredity? It is the internal control of development. Let us consider its action in the case of the fertilized human egg, as this minute body, only one-one hundred and fiftieth of an inch in diameter, proceeds to produce a man. At first uniform, equivalent cell-division is its business, until a hollow sphere of cells is produced. Then specialization begins in different parts of the sphere—the hollow sphere becomes pushed in at one pole, forming thus an inner and an outer membrane, and each membrane undergoes further foldings—is thickened there, thinned here, pushed in or pushed out. Lateral folds grow together in the middle line or are torn apart; pockets arise, at first simple, then dividing again and again to form glands. Finally, after days and weeks of foldings, local thickenings and thinnings, atrophies, concrescences, perforations, splittings of cell masses, fusions and vacuolizations of membranes and migrations of free moving cells the specific form, with its principal organs is blocked out. Now histological changes begin, cells destined to form vessels or nerves elongate, future gland cells remain cubical, epidermal cells flatten. Some secrete great masses of supporting tissue like that of gelatinous tissue, cartilage and bone, and others undergo a chemical transformation within themselves, turning into horny materials like that of the outer skin and the hair. Thus as each different kind of cell arises it assumes its special function. Then co-ordination of function appears, first between nerve and muscle, and then between the central nervous system on the one hand and the muscles, glands and sense organs on the other.

For some time before birth, heart and bloodvessels, liver and kidneys, nerves and muscles, are hard at work. Birth is a mere incident in development, involving a new sort of food and means of feeding and new external stimuli. Many developmental processes are still going on at birth and continue long after, e. g., the secretion of the formed substance of bone and other tissues, the growth of hair, the chemical manufacture of the pigment of hair and iris, and a score of other less obvious processes including the extraordinarily important development of the association fibres of the brain. One after another these become established, and fortunate in results the teacher who is prepared to exercise each new function as it becomes fit.

But, already, long before birth, a different and not less important fact is evident. Many of the great developmental processes—of which the culmination is, perhaps, in the fourth month—have stopped. The stopping of a process is as important a part of ontogeny as the initiation of a process. And it is upon the proper adjustment of the initiating and inhibiting of processes that normal development depends.

We must pause for a moment to consider what determines the course of development—why should a process start, take such and such a course and then stop? We know that all protoplasm is highly irritable and responsive; and we can see that developmental processes are responses to stimuli. A part already formed acts as a stimulus on an arising part. In

ontogeny a nerve buds out from the spinal cord and makes its way, almost infallibly, to connect with particular glands or sense organs; it is directed in its course by organs already present as a ship is directed in its course by beacons that mark the channel. But the sensitiveness of the responding organ is as important for the results as the nature of the stimulus. I speak one word to two dogs; one growls, the other jumps to lick my hand—the same stimulus yields a different response from two protoplasms unlike by training. Indeed, the responsiveness of an organ is determined by its composition and its structure—sometimes (even amid abnormal surroundings) the internal properties lead the organ to a predestined fate. For instance, I have seen on the head of a duck a minute foot. It had a duck's scales, a duck's web, duck's toes and nail and was, in short, a miniature, deformed duck's foot. Without doubt a bit of foot-forming embryonic tissue had become misplaced upon the skin of the head and, even in this abnormal environment and with these abnormal connections, had worked out its predetermined course. Thus external stimuli and internal tendency both determine the response. So the initiation of this process, the inhibition of that, are the result of the interaction of specific internal properties of the reacting protoplasm and the surrounding stimulating parts, and the former is the more powerful; the latter modifies but cannot master the former.

Now one child differs from another child because it has a different ontogeny. And one child has a different ontogeny from another child because its protoplasm has a different inherent responsiveness or receives during development different stimuli. This may be illustrated by an example. Here are a yellow haired Swede and a black haired Italian. Why are they different? We know that yellow hair contains the same pigment as black hair, only the development of the pigment is stopped at an early phase; a phase that black hair passes through and goes beyond. One may say the pigment in the yellow hair lacked the ability to further oxidation, which the pigment in the black hair possessed. Now, if that ability to be oxidized to a second or third stage be lacking in both parents, it will be lacking also in the protoplasm of the offspring and they will all have yellow hair.

Similarly, hair-lip and cleft palate, which are due to a failure to unite in the middle line of originally paired organs, probably result from a premature loss of responsiveness to the uniting stimuli. If there is such a loss in both parents there will probably be such in the children also, but this has not yet been demonstrated for these two defects. If in both parents the ability of the web between the fingers to grow is lost, as it usually is except in syndactyls or duck-like birds, then that ability is lost in the children and the development of the web is stopped early.

If in both parents the development of certain association fibres of the brain is stopped at an early age through the running out of the proper developmental sensitiveness or responsiveness then they will be absent in the

filial germ-plasm and *all* children are apparently feeble-minded or imbecile. Listen to Dr. Martin W. Barr, Chief Physician of the Pennsylvania Training School for feeble-minded children: "Three imbecile children have parents *each of whom* is imbecile and drunken. . . an imbecile deaf-mute, an inmate of an alms-house from girlhood, is the mother of six illegitimate children. I have recently been called to examine a mother with two daughters; a man, his daughter and her illegitimate child—all imbecile; an imbecile woman with seven illegitimate idiot children. I know furthermore of a family of twelve brothers and sisters all of the lowest grade of idiocy, two lapping their food like dogs, their only language animal cries." What clearer demonstration could be given of the way a child is bound by heredity.

I might multiply cases almost indefinitely showing how a defective protoplasm cannot produce the missing character. When both parents lack one of the rows of phalanges in the fingers then all of the children must likewise be short-fingered. If both parents lack the sixth finger characteristic of polydactyls then all of their children will lack the abnormality. If both of the parents lack the disturbing factor that causes night-blindness then none of the children will show this disturbance. If both parents lack brown eye-pigment all of the children will be blue-eyed. If both parents lack the brown pigment in the hair all of the children will be tow-headed. If both parents lack the curling tendency in hair then all of the children will have straight hair. If both parents are deaf or blind through lack of the same elementary character then (probably) all of the children will have the same type of deafness and blindness.

The general principle here enunciated, which is the simplified outcome of recent studies in extension of Mendel's law of heredity, can be applied to matings in which one parent lacks the character and the other parent possesses it, in the pure state. Under these circumstances all of the offspring will have the character; but they will have it in a diluted condition, called the *heterozygous* condition. But in the germ-cells of such heterozygous individuals the characters are not heterozygous but pure again, an equal number having the character and having it not. When two such individuals, each with the same heterozygous character, are mated one-fourth of their children will lack the character, one-fourth will have it in a pure condition and two-fourths will have it in the heterozygous condition again. These facts indicate sufficiently how clear-cut and mechanical are the modern laws of heredity.

I am aware that, in the same way as education supplies for the average child a valuable stimulant to the developing faculty at the appropriate time, so (but to a much less degree) vigorous training may force to a stage further an arrested development, as is done in institutions for backward children; but if, as is sometimes the case, a quality or character is entirely absent, environment, even of the most favorable sort, can do nothing. Hear Dr. Fernald of the Massachusetts School for the Feeble-minded:

"All degrees of congenital mental defect, from the merely feeble-minded child to the profound idiot, are the result of certain definite structural defects or inferiority of the brain, or the results of brain disease or injury. These brain abnormalities are permanent conditions. No really feeble-minded person ever was, or can be entirely cured.

"It is a question of how much improvement is possible in each individual case."

What is true of defective mentality in general is true of particular mental and physical qualities. There is probably not a child born with every one of the thousands of human characteristics developed, or capable of becoming developed even to an average condition. Through the wonderful capacity that one organ has for assuming the work of some other defective organ, most of us get along tolerably; for one kidney may do the work of two or the sense of touch replace in part the loss of sight. But, despite compensatory and vicarious adjustments, our real defects do constitute our real limitations and there is never a child born whose work in life is not limited and determined by the absence from its protoplasm of this character or the presence of that. But in the degree of its limitations one child may differ from another as an anthropoid ape differs from a perfect man—the noblest work of God.

WHAT LIGHT DOES HEREDITY THROW UPON THE POSSIBLE FUTURE OF EDUCATION?

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Face to face with the subtle—in many respects, unsearchable,—ramifications covered by the abstract terms "Heredity" and "Education," we must be utterly frank with ourselves at the outset. For, truth to tell, the rigid limits of predilection and ignorance hamper us on every side. It is convenient to class them under two heads. (1) Limitations peculiar to the speaker—in his training, in the bias resultant upon his special work, and inseparable from his habitual standpoint. (2) Limitations inherent in the subjects themselves. The men who possess real acquaintance with "Heredity" and "Education" would be the foremost to emphasize their own manifold doubts concerning many matters central to each; they would be the first to acknowledge the necessity for reasoning by analogy, as an expedient to fill gaps, and to recall that, of all logical devices, analogy lies most open to the insidious attack of fallacy.

(1) As to the former. An investigator's life-long discipline and intellectual associations enmesh him in a veritable maze of presumptions that he cannot be expected to overpass. For example, as a humble laborer in a

certain corner of the broad philosophical field, I am well aware that I harbor but hazy notions of numerous phenomena built by my scientific colleagues into that complex synthesis named "Heredity." Nor can I conceal from myself that, oftentimes, I fail to follow biological arguments perfectly, because I lack experience to assign relative values to the facts cited. Similarly, seeing that my daily work has rendered me familiar with analysis and internal exhibition of general concepts, rather than with particular percepts, I cannot but approach the hypotheses incident to "Heredity" and "Education" from a distinct angle. This, and much like it ,you must bear in mind as I proceed. Above all, you must remember that I have not the remotest claim to expert knowledge of the evidence proper to biological theory, or of the conventions, as I understand them to be, presupposed by professors of educational practice. (2) As to the latter, "Heredity" and "Education," along with other "universes" of the same sort (as we philosophers call them), imply very various and most fluid conditions. For instance, after no little study and pains, I doubt whether I grasp the precise consensus of scientific opinion about "Heredity" current at the present moment. Nay, I am not quite sure that a consensus exists. While, after years of immediate contact with the beatified representatives of "Education," I am fairly clear that this term connotes meanings apt to alter in wondrous fashion as it passes from mouth to mouth, meanings fated to relapse sometimes into mouthing. But thus, it would appear, outlooks differ. Accordingly, at the start of this journey, I am caught already in a sea of trouble, and can escape shipwreck, if at all, only in my own conspicuous cockle-shell. Thanks to my dearest enemy (for this occasion), your President, I am to be buffeted to make a Michigan holiday. The subject, prescribed to me by him, is, to use a mild term, unfortunate, in view of my equipment, possibly in other respects, as may appear later.

I.

Let us begin, then, with an effort to clear our minds of cant about "Heredity." What is it? First, and generally, it must be obvious to the merest tyro that an organism comes, complete so far, from its immediate ancestors. As our problem confines us to humans, we may declare bluntly, that men are produced by their parents, and that this genetic connexion finds its objective basis in the spermatozoon (sperm-cell) and the ovum (egg-cell). Any airy, fairy metaphysicising that would disguise or evade this relation can be dismissed, *ipso facto*, for a counsel of folly. Thus, "Heredity" is no entity "out there," but a name given to a process wherein an organism arises directly from others, maintains their nature, and so begins with an outfit whence its career proceeds. Or, as Professor E. B. Wilson puts it: "The life of successive generations of living beings shows no breach of continuity, but forms a continuous vital stream in which, as Virchow said,

rules an 'eternal law of continuity'." It is a piece of bare-faced mysticism to allege that *anything* happens in a human life independently of the irremovable material basis. So, the facts of "Heredity" concern the question of continuity more or less exclusively. *What* did you get from your father? from your mother? from your forebears? *How* did you get it? Plainly, these inquiries must lead to a comparative study of your characteristics and their's. But this investigation need not presuppose *any* conceptual conclusion about "Heredity" as such. Nor need it presuppose a theory of that other basal fact—the fact of individual life-history—known as "Development." As a consequence, it appears a legitimate inference that the phenomena of "Heredity" can be realized most definitely in its problems. Thus, the constitution and recoverable past of germ-cells, controlled breeding, permutations of amphimixis, and the like, yield results that go to the construction of the heredity-concept, because they enable us to present, if little more as yet, the important characters which, under definite rearrangement, *are* individuals—are ourselves. And, so far as I am capable of seeing, the conclusion of the whole matter may be summed in the statement, that "Heredity" involves a concept of *mode*, not a concept of *cause*. What do we know of this mode? Synoptically, something like this. Germ-cells, in their neuclei especially, are the *continuum*; the two are identical. In them the immediate ancestors integrate after a specific manner, which we are now able to master in some detail. We have every reason to infer that the respective contributions of father and mother reappear in offspring, even if most variably; and that, sometimes, given elements manifest themselves strongly, or seem, on the contrary, to undergo inhibition, whether they be traceable to parents or to remoter progenitors. We are certain that environment is a *necessary* condition of these changes, and that it bears relation, not only to the organism *en bloc*, but also to its various factors separately. We know that individual recapitulation (as in the history of the kidneys, for example) has presumptive evidence. In short, we are in process of eliciting the modes. On the other hand, we are in no position to explain the extraordinary potentiality of the germ-cells, nor can we formulate the principle of order whereby *just this* individual arrives finally. That is to say, cause eludes us. Here we must rest satisfied with hypotheses. And we ought to try to frame our hypotheses so that they may be capable of verification or of disproof. If I might venture a word from the logical standpoint, I would dare say that the fearsome metaphysics afflicting some of our biological friends root in the fact that the theories advanced do not really matter—they float on a plane whither biological evidence cannot soar, at least with our present resources of observation and experiment. And we have to remember that hypotheses which, in the nature of the case, furnish no basis for further verification, must rank as nothing more nor less than logical Weary Willies.

But, some enthusiasts will exclaim: "Either you are altogether too cautious, and pessimistic about present knowledge, or this is a miserable

account of empty benches. We had always supposed that there was much more in 'Heredity' than a prosaic pursuit of recondite chemical transformations, and suchlike. We had associated it with maternal impressions, of the sort certified so ingeniously and vividly by popular novelists. Nay, we are acquainted with a boy whose mother, when he was much younger than he is now, suffered an automobile accident; as a result, he was born with a stammer, dominated by a peculiar note that leads his thoughtless playmates to nickname him, 'Honk-honk.' We had typified it in the dyspsomania, inevitable as Juggernaut's car, dear to the contemporary playwright. It had moved our imaginations profoundly as we heard of telegony. Indeed, a friend of our youth, whose mother's first husband bore a lemon mark on his left elbow, although a child of the second marriage, still exhibits, after varied experiences, from the New York tenderloin to Tucson, Arizona, a raspberry mark broadspread on the point of his proboscis. Our Sunday newspapers had led us to believe that a judicious selection of beans and cider, cakes and ale, or *paté-de-fois gras* and champagne, would enable duly considerate parents to determine the sex of their children. Above all, being educators, and well read in the current literature of our profession, we had felt justified in holding that our little charges became, from year to year, shad, monkeys, missing-links, cave-men, barbarians, Indians, nomads, shepherds, tillers, and we had tried to train them in accordance with these successive hereditary achievements." To all of which I can only say—thus do "facts" slop over into sloppier theories, thence into sloppiest practice; and add, by way of solemn warning, that, in these matters, we cannot keep too watchful eye upon a ubiquitous type, given to frequenting teachers' meetings, whom we might well baptize "Dr. Viewy."

Nevertheless, these whimsies which, as cautious investigators know very well, are hardly a travesty of "newspaper science" and popular impressionism, do possess a certain basis, even if separated from it by a far-flung drift. For, as one can see readily, problems of "Heredity" would never have arisen did not germ-cells, mediated by a genial environment, proceed to become such and such individuals, marked by special characters. Now this means that these problems stand in close relation to the larger question of "Development." Moreover, some characters may be heritable quite clearly, others may be doubtful, while still others may be acquired—may be modifications—in the strict sense. So, further, the problems of "Heredity" impinge upon the facts of inheritance. And these necessitate an inquiry that must proceed by the usual methods of observation and experiment, or, as recently, by that most suggestive extension of the mathematical theory of probability—Biometrics. It is in these latter fields, and their appurtenances, rather than in the sphere of "Heredity" pure and simple, that we are apt to get stranded in the shallows of illusion. Besides, the higher one rises in the scale of living being and organization, the greater difficulty in dissipation of imaginary analogies and irresponsible references.

II.

Now, fortunately or unfortunately for the present theme, "Education" presupposes precisely the highest kind of organization known to us. For it carries one at a step from the physical and physiological to the psychological, nay to the psychological integrated and reintegrated till, at first sight, the mind reels before the spectacle. And we may as well confess that, while theory finds ample room in the circumambient atmosphere, facts tend to elude, are even unobtainable in some directions. I have therefore little choice in the matter of procedure. Consequently, I shall direct your attention, first, to a few considerations based on what we may call facts—at least by a slight stretch of courtesy. Thereafter I shall proceed to a theoretical proposition, one, perhaps, no less and no more open to destructive criticism, or worthy of blind faith, than its near kin, the intellectual spooks that haunt the biological camp.

However, as the terms of the present discussion show, it is not my duty to deal with the physiological aspect of "Heredity," even granted I had the competence. But, as I have said, certain positions in this regard must be accepted without any reserve. For example, every competent student would agree that the sweep of empirical science has been extended far beyond foreign objects in the "outer" world. The processes of nature, as understood today, involve man and his "spiritual" achievements no less than his physical environment and physiological envelope. On the other hand, contemporary knowledge has by no means arrived at a point whence we can formulate a fundamental synthesis for these very subtle subjects, one that shall stand to them as the laws of motion to the stars in their courses. Pointedly, while we are aware that "Heredity" and "Variation" operate as factors determining our veritable being, we are unprepared to pronounce upon their laws. Notwithstanding, some facts defy evasion. To select a few obvious examples. Abnormalities of sensation, motor defects, the physiological conditions of attention and association, the influence of fatigue, the balance of the nervous system, the possibilities of reflex and voluntary concentration, the relation of rhythm to imagery, and the like, cannot be dissociated from educational problems in individual cases. Besides, all these persist in the tendencies presented to us by our parents and remoter ancestors. So much is sure. Whatever ultimate conclusions may lie in a future that we wot not of, we are bound to be frank with ourselves, and affirm that the roots of our life strike deep in the race whence we spring. Personally, I am not of opinion that theory has achieved a stage where the constitutive process can be stated four-square in a single proposition. For instance, taking an example from my own side of the house, I am unable to accept Hering's view, that our reproduction of ancestral likenesses may be explained as unconscious memory of the past. Persistent undulations, characteristic or even formative of molecules, and stable in spite of their ready response to

change, offer an account of "Heredity" in terms at once of physics, physiology, and psychology, no doubt. But it seems to me that this theory manifests all the vagaries of panpsychism, without proffering compensation. Of similar import is Haeckel's famous pronouncement. "The true and ultimate *causa efficiens* of the biogenetic process, I propose to designate by a single word, Perigenesis—the periodic wave-generation of the organic molecules or plastidules." This periodicity of "representative particles," in whose ebb and flow lower organisms suffer little loss or gain, while higher organisms forget and learn much, clouds the issue, as I see it. Still, theory aside, bare "facts that winna ding" do emerge. It is sufficiently apparent that physical and physiological qualities are more stable than psychological, and, therefore, that their transmission is surer. Or, if so you prefer to put it, the more elementary factors are less likely to undergo annulment, even if the tendencies due to them, as developed in individuals, vary greatly; even if the modalities, to adopt Helmholtz's word, prove less numerous at the lower end of the scale, numerous to the verge of confusion at the upper limit. All this, moreover, leads us to infer that "Heredity" possesses a physico-chemical basis, that, as Gautier says, "the force which maintains the species, and gives it the character of constancy and resistance, is nothing more than the resultant of the forces which maintain the *chemical species* of which the organism is composed." In any event, the empirical conditions enact a rôle of the highest importance. And we must take care to emphasize this brute fact, if we would escape mystical fogs. On the other hand, thanks to the present state of positive knowledge, one ought to have no difficulty in agreeing with Höffding. "Even though the individual organism, which in spite of its completeness and relative independence is still a republic of cells, were to be explained as compounded out of elements, and its origin made intelligible through the law of the persistence of energy, this would not explain the individual consciousness, the formation of a special centre of memory, of action, and of suffering. That it is possible for such an inner centre to come into being is the fundamental problem of all our knowledge. Each individual trait, each individual property, might perhaps be explained by the power of heredity and the influence of experience; but the inner unity, to which all elements refer, and by virtue of which the individuality is a *psychical* individuality, remains for us an eternal riddle." Nor can we accuse ourselves of positions a transcendent "self" here; we allege simply, that analysis must go farther, and reckon with still other facts.

Furthermore, we dare not dodge or eliminate these survivals of the ape and tiger by the simple expedient, dear to some, of shifting the venue from individuals to races. For we may regard it as unquestionable that evolution takes place, not according to this or that quality in this or that individual, but through the mediation of characteristics common in degree to all members of a species, characteristics productive of a norm that enables us to prove variations of individuals whether by excess or by defect. And,

just as the physiological organism acts as a determining factor in the arrangement of intra-individual qualities, so the physical environment exerts similar influence in the arrangement of qualities peculiar to groups. Every animal species possesses a physical basis, and the same holds true of any conceivable human society. It is undeniable that the configuration of France and Germany accounts to some extent for the differences between their inhabitants. In like manner, the association of rivers with the sites of populous places, not merely in the present, but through ages, has been noted often. Everybody perceives that the natural wealth of the United States has determined immigration to us rather than, say, to Australia, to Paraguay, or to the lone vastnesses of the Antarctic. In the same way, climate, with its components of light, temperature, and moisture, has affected races profoundly. There are those who would trace American wit to our atmosphere, where objects stand forth almost stereoscopic, without the purple iridescence that bathes the landscape in the moist isles of our forefathers. Our untravelled folk have not the remotest idea of the cosmic intimation that choruses in the amber glow of a Scottish sunset. So, too, in the olden time, as far back as Pindar, the Greeks attributed the swinishness of their favorite butts, the Boeotians, to a like cause, as Cicero tells us. It is interesting to note that this very idea has persisted in literature to Carlyle. Further, the factors of the environment count for much. Metals, water, forests, vegetable and animal life, the physical possibilities of industry mold a race just as his body frames an individual. The burly habit of the Englishman, his round trunk, his phlegmatic temper, his "you-be-damnedness," in short, imply his environment, as even Shakespeare saw. And, if we are to observe the great law of economy in thought, we must permit empirical explanation to carry us as far as it can. Nay, we *ought* to go to the physical for the group, to the physiological for the individual, if we desire to gain a vantage whence we may accomplish something panoplied in the armour of accuracy. I am anxious that there should be no blinking the issue on these points, and no misunderstanding of facts now known, or of their trend.

III.

It was needful to dwell on these aspects with no little emphasis, because, as we shall see, there is a sense in which they may be said to function subordinately when "Education" and its special difficulties claim the centre of the stage. The passage to one of the most complex arrangements developed by human society transports us at a leap to a world diverse from that of the biologist. But the biological elements remain, assert their presence continually, and must receive due weight in any reckoning. We breathe, and blink our eyelids, just as the heart beats—automatically. Somewhat less simple are actions, like coughing when "a crumb goes the wrong way," or sneezing in a dust-laden chamber—reflexes, *independent of control* by consciousness. Up

the scale another step come the higher reflexes, wherein we resemble wasps and beavers—habitual activities requiring, apparently, *no interference from the higher nerve-centres*. Next we have complex reflexes, involving these centres, and yet so inbred that they operate without prior empirical trial. In the last two cases, the process, while perfectly balanced in relation to environment, may not *need* to pass the threshold of consciousness. And on this obscure problem theories crowd. But, be theory what it may, it is plain enough that, to this point, biological considerations, especially in their presumptive psychological extensions, predominate. And we must heed the fact that all these “psychological” or quasi-psychological events “survive” in man. There can be little doubt, to use a picturesque phrase, that we have “lines of least resistance in our brains,” and this unconsciously. Likewise, mere perceptual reference, below the level of organizing reason, is shared by us with the other animals. On the other hand, man employs these as a kind of spring-board whence he propels himself to a psychological plane where brutes cannot follow—hence this very designation of them. Opinions *pro* or *con* man’s *exclusive* possession of “reason” need not worry us here. But no one would dispute for a moment that human reason attains a new dimension, or that, in turn, the evolution of speech, *pari passu* with other modes of co-operation, have reoriented man to animal conditions in many respects, to such an extent, indeed, that he has often mistaken himself for an angel or devil, occasionally for a deity, and has forgotten his poor cousins on four—or fifty—feet. Little as he may be justified in this self-esteem and superficiality, he is justified at least to the extent that a new group of problems emerges from *his* evolution of consciousness. Moreover, new methods of approach and inquiry become necessary. Omit them, and you confine yourself to the fringes of the question.

It seems assured that, till they diverge on this plane, human young, like animal, conserve the fundamental characteristics as received from past generations, although with numerous variations, slight, but obvious; for example, in brothers and sisters. Or, putting it otherwise, “Variation” revolves about a normal, average *continuum*. Further, with high probability, this holds for the psychological no less than for the physiological. Meanwhile, I am unable to see that Professor Pearson’s results admit of another interpretation. Nevertheless, not only in the nature of the case, but as matter of experience, mental variations tend to elude us, because their limits are wider, to say the least. This fact may be, possibly is, due to the reaction of “memory” and “reason” upon the simple reflexes. But, even so, the issue does not eventuate in anything that amounts to discontinuity, so far as I am capable of judging. The “inborn” set appears to anchor the individual, so to speak. That is, in the organism, as in those psychical activities traceable directly to physiological structure and process, permanence of type, and close identity of co-ordination, must be held proven. Accordingly, it is a fair inference that “Education” encounters limits here. It cannot create, although

it may elicit or inhibit, given capacity—given by “Heredity.” Thus the facts of “Heredity” may well clarify our notions of the practicable. They furnish data, incomparably more accurate than we have had hitherto, about the physiological basis; and, in particular cases, by putting us in a position to comprehend abnormalities, offer pregnant hints for the treatment of defectives, as well as puncture schemes that ought to be eschewed in the handling of normals, so that we may not force abnormality upon them. In short, “Heredity” throws lambent light on many dark places. It serves also to warn us off hair-brained adventures by proving that man is so stable as to defy our puny efforts to extend his range by any conventional methodism. For, we must recognize that it fixes unilateral adaptation in those sensomotor activities known as instinct, and also in those secondary manifestations of automatism called habits. In this way, it suggests that men possess definite mental tendencies not amenable to profound alteration by any educational nostrums. For, as Forel says, “Every human race, clearly differentiated, possesses a collection of special mental attributes inherited in the course of its evolution, attributes which no civilization can either produce or destroy.” Thus, and inevitably so, the study of “Heredity” reminds us that a great part of “Education” so-called is nothing but instruction. This sort of thing perpetuates, and is condemned to perpetuate, a type which, later, “will exhibit the talent for all unproductiveness . . . one of those creatures incapable of individual combination and independence of mind, but gifted with facility.” By contrast, we may learn that real Education must proceed otherwise. It must say insistently, “Keep your brain for better work. Form your will, your judgment, your independence of character.” But evidently, we have reached our plane of divergence here.

IV.

Man is an animal, and something more—he is also *man*. And, while it may be difficult to indicate the precise difference in any brief form of words, I have the temerity to sense the contrast as follows. So long as you classify him with the other animals, and attempt to estimate him by means of this genealogical relationship, you find that man *varies* but little. The stable element enforced by “Heredity” lies heavy upon him. On the contrary, admit the phenomena characteristic of the human plane, and you discover that he is capable of extensive *modification*. Well, then, what may these phenomena be?

In the first place, and with special reference to the individual, there appears to be a psychological cross-roads, as it were, where men diverge from animals, although the two paths may continue parallel for a long distance. We know that animals can be taught to form new associations on the basis of perception, as numerous experiments show; among the latest, those of my colleague, Dr. Casteel, who is working with turtles. Perceptions

may eventuate in inference indicative clearly of intelligence, but yet not demanding for their explanation any reference to that higher reasoning dependent upon power to employ abstract ideas. That is to say, we have obvious reactions to a particular group of circumstances, but no grasp upon a series of kindred groups in such a way as to elicit principles, causes, and the like. Necessarily, too, intelligence fails here to detect an identity of nature in similar groups which can be carried about "in the mind," and applied immediately to other cases. I say that, in this regard, man and animals may diverge, and still pursue tracks parallel to some extent. But, sooner or later, a decisive point of departure arrives, where the human moves away from the animal, and follows a fresh direction. Then we come upon the psychical manifestations peculiar to reason—manifestations impossible except as abstract or general ideas are used, not only to interpret perceptions, but also as foundations for the construction of further ideas more abstract still. Thus, animals, like many men in a primitive stage of mental development, are incapable of science. On the other hand, when science, or any related *Weltansicht*, makes its appearance, a new situation confronts us, one in which, as I have hinted, the biological element functions subordinately. The poet eats like the lark, but sees differently; the physicist subsists like the giraffe, but his outlook presents a most contrasted complexion; the philosopher must satisfy thirst like the eagle, but his eye scans another scene; the statesman is banqueted like the queen-bee, but he foresees as she never does. Arrived here, we can no longer adopt Pope's easy, osy attitude, and ask blandly,

If plagues or earthquakes break not Heav'n's design,
Why then a Borgia or a Cataline?

For, when abstract thinking, with its generation of transitive ideas, has upthrust its disturbance within him, man begins his eternal struggle to escape the thralldom of Nature. Or, as Strauss said, "In him Nature endeavored to transcend herself. Man not only can and should know Nature, but, so far as his powers allow, should rule both external Nature and the natural in himself."

Yes, "man"! Whereupon, secondly, we have stepped beyond the tiny circle of the individual, and suggested already another source, possibly another kind, of divergence. As was indicated at the outset, analogical reasoning besets the subject now before us. The thunderous phrase, "man an organic community," echoes from idea to idea, resounding on many misty mountain-tops of thought, reverberating in valleys where continuous twilight prevails. Even so, for the present purpose it may suffice to suggest that man, *the* individual, never exists as *an* individual. Briefly, that definite and apparently separable thing which we fain would term *a* man, faces many ways, all of them leading *from* self. As we have seen, the "omnipotence" of "Heredity" asserts, and with no uncertain sound, that his

outlook lies to the past; as an organism, he looks *backward*. Yet, looking, he thinks the while, whereupon other considerations appear, ill-understood, because investigation stands but on their threshold. Despite ignorance, their presence transforms. As a reflective being, man looks *around*, nay, projects himself into phases of experience that possess neither local habitation nor name. Perchance, this far world of the mind's desire may win to fact some day. Today it is not! As a moral and religious being, man looks *up*, demanding completion. Like Carlyle's famous shoebblack, he would "require, for his permanent satisfaction and saturation, simply this allotment, no more, and no less: God's infinite universe altogether to himself." Your individual, precisely when he most deserves the epithet "man," poses as the spectator of all time and existence or, better still, serves himself the bearer of all the ages that ever were to the greater ages that are to be. In his capacity as an organism, he may indeed assume the state and dignity of an "individual," because he cannot communicate its special modes—sensations. In his capacity as a man, he never earns title to this name, because the ideas, purposes, beliefs, and judgments of value that alone suffice to his individuality—the more it is to be reckoned with, the more conspicuously—have been communicated, must remain communicable in essence, so be they would rank as effective components of experience. The specific modes of anything fit for characterization as intellect, ideal, or culture, are specific just in proportion as they are communicable. *Allgemeinheit* constitutes their fundamental difference, as the logicians would say. And, worse luck, knowledge fails us on these abstruse matters, understanding lags; we can but suppose vastly. Nevertheless, good cess or bad, "Education" makes its bed just here.

From the standpoint of biology, indeed, of any positive science, we must recognize a whimsical or, as the English would say, Gilbertian, universe on this plane. Positive science traffics in the relations of objects with objects and, in its psychological extension, in the connection between subjects and objects. All cases typical of these phenomena are conditioned by a process of actual contact, or, as in sight, for example, by what is tantamount to contact—the mechanism of waves impinging upon that photographic camera, the eye. Moreover, investigation concentrates its effort upon the discovery of effects as they flow from causes. Thus a dominant feature tends to control the situation; causes are of one kind, effects of another. As Huxley observed, the odor of the musk-rose and the muskiness in the rose remain forever incommensurable. "It is as absurd to suppose that muskiness is a quality inherent in one plant as it would be to imagine that pain is a quality inherent in another, because we feel pain when a thorn pricks the finger." But, "Education" arrived, the primary fact happens to be the interpenetration of mind by mind. Nothing occurs in the nature of the contact just noted, unless we say, by a permissible bit of materialism, one idea caroms upon another. We may predict how an objective sign will eventuate psychologically in certain cases. But we are at no such advantage

with ideas. Plentiful evidence in the past tells me that I cannot prophesy what awesome rubbish the "common or garden" reporter will extract from this address. Probably, his misunderstanding will pass the comprehension of all others who hear it. Two friends meet to discuss a thorny question; they have not the faintest notion how their intercourse will modify the conclusions of both. The identical words spoken by me to you, not only may, but must elicit contrasted conceptions from auditor to auditor. For they neither enter a vacuum nor command the same reactions. They must find their way to due place in that extraordinarily complicated whole, the personal experience of each among you. They cannot escape the twist given by convictions and presuppositions that control you, whether you know it or not. "Education" consists of material common to individuals, and depends upon the possibility of producing harmony within cultural groups, whose every member forms a group in his or her turn.

"Let me calmly face

The paradox which leads me to maintain
The very phrases of the enemy
Over against the championing of friends. . . .
Who shall be stronger, still must ease his strength
As I, in speaking self forth in the speech
Of great souls, great by self-poised circumstance,
Not blindly passion-warp'd, but more and more
Personal, comprehensive of world-life!"

Needless to insist, problems cluster here, like filings to a magnet. Why is it easy to propagate ideas at a definite time, and within a typical civilization? Why do the same ideas become "impossible" under other *geistliche* conditions? How happen the ready response and rapid extension? How, on the contrary, the inhibition and even distaste? Why should we have *denominational* "Education"; is not truth one? What transformations are incidental inevitably to such processes? Possibly hypnotism might throw light upon these problems. It certainly illuminates phenomena of arrest and reinforcement under the circumstances suggested. But then, again, we pull ourselves up sharply in its presence,—it hardly deals with the normal or average, occasion. Study of "mob" psychology might offer hints; but, then, the mob happens to wallow in opinion rather than to seek the white rays of knowledge. Hence, its raucous voice is the voice of God within very narrow limits. Contagion, as psychologists call it, and "Education" do indeed commingle. But, then, the subjects of the mixture must needs be exceeding fit; therefore, they are exceeding few. For, it takes overwhelming persons to propagate, or inhibit, ideas influentially. Perhaps, accordingly, the most we can tie to here might be expressed in an admission that, after all, the dithyrambs of some 18th century German romantics were not so far out. Select Herder, for instance.

"A primitive people, like a child, stares at all things; fright, fear, admiration are the only emotions of which it is capable, and the language of these emotions consists of high-pitched, inarticulate sounds, and violent gestures. This is the first, prehistoric, infantile period in the history of a language. There follows the period of youth. With the increasing knowledge of things, fright and wonder are softened. Man comes to be more familiar with his surroundings, his life becomes more civilized. But as yet he is in close contact with nature; affections, emotions, sensuous impressions have more influence upon conduct than principles and thought. This is the age of poetry. The language now is a melodious echo of the outer world; it is full of images and metaphors, it is free and natural in its construction. The whole life of the people is poetry. Battles and victories, fables and moral reflections, laws and mythology are now contained in song." The third period is the age of manhood. The social fabric grows more complicated, the laws of conduct become more artificial, the intellect obtains the ascendancy over the emotions. Literature also takes part in this change. The language becomes more abstract; it strives for regularity, for order; it gains in intellectual strength and loses in sensuous fervor; in other words, poetry is replaced by prose. And prose, in its turn, after it has fulfilled the measure of its maturity, sinks into senile correctness and sterility, thus rounding out the life of a given national literature, and making room for a new development."

What is "the gatekeeper of the 19th century" trying to reach here? He is struggling to liberate himself from subjective feeling, and to develop a scientific basis on the concept of a normative type. As concerns "Education," it may be asserted that subsequent work, executed essentially in Herder's temper, has done something to verify his "type," at least for the individual. Is it not true that the infant faces the world modifiable almost without limit? On the contrary, however, is it not true that he has little or nothing to teach? In youth he becomes an adept at imitation, but hardly reaches a point where he can be said to mold others profoundly. In maturity and old age, the positions reverse. Suggestibility loses its resilience; the man, now made, acts as a standard-bearer, the imitator comes to be the pattern. In a word, paradox though it be, the more the individual is adopted into his cultural sphere by "Education," the less individual he becomes; yet, as a vehicle of this culture, he *has* become more individual than ever. The facts seem to admit of no dispute. And they stand in intimate connection with certain aspects of "Heredity," about which we are able to do little more than theorize. To this aspect of the matter I turn in conclusion.

V.

What more natural than that, hereupon, we should seek aid from the professional pedagogists, those sons of the marshes of our arts faculties, as

some deem them? But, on closer inspection, as the *advocatus diaboli* insists, we discover that this high vocation were all too much to load upon poor human nature. For, despite its respectable titulars, "Education" wends its way much like any other science on the make. Its material being still fluid, it flies for refuge to a familiar expedient. It tends to formulate its "stuff" by reference to contiguous sciences of superior stability. But yet in the gristle, it leans upon its lusty neighbors, biology and psychology, sometimes without clear sense of what it would be at. We may omit that portentous piece of phrase-making, "Philosophy of Education," because it turns out to be merely opinions of some notable personages, mostly dead, impossible to understand apart from thorough familiarity with their respective systems of thought—a matter hardly within the province of "schoolmen," at least if they have any absorbing business of their own worth "expert" attention. Thus, further, when we hear tell of "Education," and are informed that its "Principles" may be stated as (always with capitals, please)—*the* Principle of Stimulation, of Nourishment, of Pleasure, of Habituation, of Interest (often without principal), of Repetition, and so forth; when we are told that "IT" progresses from *the Known* to *the Unknown*, from *the Simple* to *the Complex*, from *the Concrete* to *the Abstract*, from *the Particular* to *the General*, and all the rest, we may be forgiven if we ask, and without levity, Where does "Education" come in? Is it, like the pagan gods, merely an abstraction, constantly demanding human sacrifices?

Thus our appeal to the mandarins would seem to issue in a curious result. On strictly pedagogical grounds, we appear compelled to class "Education" with local option, universal suffrage, the credit-elective system, and "other grotesque but strictly reasonable abominations." It looks as if we had exchanged the old bondage to ignorance for one more perilous—to a neologism remote from human actualities. Of course, to alter the figure, it is always possible that the fragments assembled with so much care by our pedagogical paleontologists, far afield in the Borneo of other sciences, may have been subjected to speculative restoration. In any case, I am not prepared to rest content with the conclusion that "Education" must be viewed as the fruit of a caprice on the part of that Missing Link, the State, for the granddaughter of the ghost of David Hume, Descriptive Psychology. Its obvious relation to "Descent" notwithstanding, this hybrid helps one not at all in the present problem. The *advocatus diaboli* awaits discomfiture; it may come sometime.

Suppose we try another tack, and appeal to the sociologist. In the penultimate paragraph of his "The Study of Sociology" Herbert Spencer says:

"If we contemplate the order of nature, we see that everywhere vast results are brought about by accumulations of minute actions. The surface of the Earth has been sculptured by forces which in the course of a year produce alterations scarcely anywhere visible. Its multitudes of different

organic forms have arisen by processes so slow, that, during the periods our observations extend over, the results are in most cases inappreciable. We must be content to recognize these truths and conform our hopes to them. Light, falling upon a crystal, is capable of altering its molecular arrangements, but it can do this only by a repetition of impulses almost innumerable. . . . Similarly, before there arise in human nature and human institutions, changes having that permanence which makes them an acquired inheritance for the human race, there must go innumerable recurrences of the thoughts, feelings, and actions, conducive to such changes. The process cannot be abridged; and must be gone through with due patience”

After Spencer's habit, this seems quite manifest. But its translucence barely serves to clothe an indecent fallacy. The suggestion is, that social changes parallel geological and zoological in tardiness. It would be difficult to find a more misleading analogy. Relative to our brief day, social achievement indeed lags. Relative to “epochs,” as science understands them, it is a marvel of rapidity. And the interesting point under examination now may be summed in the statement, that social transformation supervenes upon intellectual, and that, consequently, societies alter their outlook in what, for geology at least, would count as catastrophic fashion. As I have said, we know little about these matters; but the phenomena stare us in the face, implying much for “Education.”

For example, has it ever occurred to you that, before the 6th century B. C. civilization was one thing, and that, after this memorable era, along a mighty curve from the Hoang-Ho to the Tiber, it became another, and far different thing? We cannot attach less significance to the following wonderful events. Laou-tseu flourished about 550 B. C.; Confucius was born near this date, Gotama a decade later. Deutero-Isiaiah and Cyrus accomplished their mighty works about 538; Anaxagoras was born in 500, while Pythagoras entered upon his epoch-making activity in Italy about 540. Whatever the darkness of a remote past may conceal still, we are aware that to these synchronous outbursts, and all they imply, a sudden cultural “lift” must be traced, one so profound and pervasive that we, inheritors of the ages, live in its wane—its final wane, possibly—at this good hour. For, this pivotal period attained its zenith in Alexander the Great and Aristotle, and won a dominion without parallel since. Then followed a second upheaval, initiated by Julius Caesar and Caesar Augustus, which culminated in the victory of Christianity under Constantine—the most important single influence in contemporary civilization. This was succeeded by a third unparalleled movement, also of 500 years’ duration, when Mohammedanism, with its creed and polity, burst upon mankind, to furnish a rival to Byzantine and Medieval culture. A fourth efflorescence, once more lasting some 500 years, witnessed a new conflict between Asia and Europe, when the Turks, fighting for the Hither East, stimulated western civilization into an activity that left four monumental results—the eight Crusades, the systems of Scholasticism,

the bloom of Romantic Chivalry, and Gothic architecture. Lastly, the Reformation and Renascence arrived, at the close of whose 500-year aftermath we live, in a time puzzled by many signs of early change. The renewed conflict between Asia and Europe in the Russo-Japanese struggle, with its marked effect upon our American situation, means probably far more than surface signs intimate. Here, then, we see five extraordinary "lifts," following at regular intervals, and intimative of discontinuity in continuity. What does it all mean? It seems to me that laws on a cosmic (human) scale are involved at the very least. Unfortunately, we are only in the stage of fact collection for this sphere of science has not yet celebrated its centennial. And this is the more unlucky that "Education" belongs precisely to the *milieu* created by such events. "Heredity" plays a colossal role here—but what? I must content myself, therefore, with a few reflections more or less hypothetical in kind.

Setting aside the larger movement, about which alone, especially on its religious side, I possess any competence to speak, what may we say? In the first place, the conviction grows upon me that, whatever may be the biological case, when we come to cultural conditions a primary factor is precisely the constant transmission of acquired characters; or, more accurately, of modifications peculiar to and originated by individuals in the course of their personal careers. Our present theme does not require that we dogmatise about the *means*; the circumstance, in some sort, overwhelms by its recurrence. For instance, take Shakespeare or Milton, Emerson or Darwin. One can allege, doubtless, that Shakespeare voiced the quintessential quality of the Renascence; that Milton wrought a wondrous combination of Greek beauty with Protestant theology, and Puritan morals; that Emerson grafted Fichte's popular works and Romanticism on a new place, in a new world; that Darwin clinched with serried evidence the suggestive theories of Vico (1722), Montesquieu (1734), Buffon (1749), Monboddo (1773), Erasmus Darwin (1794), Goethe (1795), Lamarck (1809), G. St. Hilaire (1830), and Chambers (1844), to say nothing of the less prominent Matthew (1831), and Wells (1818). For all alike, "things" were in the air; and this may be described as the "Heredity" aspect. At the same time, it cannot be denied that these men of genius initiated a fresh intellectual "lift," which transmitted itself from them, and became an integral portion of the heritage received by later generations. While it is true that each occupied a place in the order, it is also true that each performed a feat akin to creation—acquired a modification, not present otherwise, and that the acquisition passed on.

Such souls

Whose sudden visitations daze the world,
Vanish like lightning, but they leave behind
A voice that in the distance far away
Wakens the slumbering ages.

Thus, the upshot of the matter appears to be that, on this level, two main factors (each enormously complex) can be detected; they unite to serve the *continuum* and to keep it alive. *First*, we have the *solidarité* of a people, race, or culture; this element can be seen at its tensest today in France. When the ill-starred Bazaine was courtmartialled for treason, because he surrendered Metz, he pled in extenuation, that the government had fallen, and that no superior authority remained to consult. Whereupon the Duc d'Aumale replied, in a phrase classical since: "Monsieur, il y avait encore *La France!*" We "Anglo-Saxon" barbarians incline to regard this as a piece of quixotry, and to class it, with the strictly parallel manifestation for art, enunciated by M. de Biez, as so much Gallic folly. "Gray, which is the color of the sky in France, is also the color of truth itself, of that truth which tempers the impetuosity of enthusiasm and restrains the spirit within the middle spheres of precise reason." On the contrary, it amounts to a transcript of fact. The French democracy is nothing if not institutional, and offers the best contemporary illustration of "group-heredity" on a large scale. *Second*, we have individual initiative, variation, modification—call it what you please—best seen, possibly, in English idiosyncrasy, and set forth so fully from the French standpoint by M. Demolins in his brilliant work, "The Superiority of the Anglo-Saxons." It is also manifested, after very different style, in the confusion due to our own lack of organic nationality, put piquantly by one of our best novelists, as follows. The boys of a middle-class, well-to-do, cultivated family are about to have their annual peg-top contest in the barn, and the mother wonders what sort of crowd they will fetch from the public school.

"Going to the window, I gazed out;; but my thoughts were instantly focussed by the procession coming from the barn, consisting of three or four dogs, Richard, Ian, and their guests. Scanning these last curiously, I saw this strange combination: the son of the Anglican Catholic clergyman; the boy of the Polish shoemaker, suspected to be, though not confessedly, a Jew; Patsy Nally, whose father raises onions and pigs on the far side of the village; the son of the Italian fruit-dealer who goes by the nickname of Toney 'Guinea'; the Crusiak cripple yclept 'Hop Sticks,' whose Hungarian father is flagman at the turnpike railway crossing; and Sidney Hollister, the only child of the richest magnate of Oaklands and Bridgeton combined!"

Now, so far as complex civilization is concerned, "Education" maintains itself in unstable equilibrium between these two factors co-operant throughout the *continuum*. Having regard to this, how shall we overestimate the value of fuller knowledge about the "Heredity" element on the culture-plane? Further, any solid facts that we can glean must spell hope, and in big letters. For, obviously enough, an unbroken conflict between two tendencies affects the whole educational process, and is responsible for much present hesitation, not to say confusion. One effort bends itself ever to impress the traditional, or approved, culture and normal aims of the com-

munity upon the individual. So much so that, as Ruskin objurgated, "Modern education for the most part signifies giving people the faculty of thinking wrong on every conceivable subject of importance to them." But on the contrary, these very achievements of a society would die the death by inanition unless vivified by exceptional persons, who raise them to higher levels, or find new channels for their expression. Here we light upon the reason why significant men in the various forms of social activity tend to line up against each other. On the whole, we observe two antipathetic types—the formalist and the idealist. Thus, in philosophy, there are the sophists or professorlings *versus* the sages; in religion, the ceremonialists and ecclesiastics *versus* the saints and mystics; in literature, the philologists *versus* the artists; in science, the methodists *versus* the naturalists; in politics, the aldermen *versus* the statesmen; in education, the mandarins *versus* the humanists. In each case, the one side stresses approved social achievement, the other looks for life in and from individuals. And, as a rule, the children of this world hold the children of light in bondage, to the bedevilment of long-suffering humanity. For, the higher a thing is, the less likely its success. Its appeal flies over—or, as often, *through*—the heads of the average.

The *raison d'être* of Education may be defined as the development of intelligence, *i. e.*, to lead man to discover a stable order in his own nature and in his relations with his kind. All that subserves this end may count as good relatively, the rest as bad or, at best, superfluous. For, as Spinoza said, in a very wise document:

"Before all things, a means must be devised for improving the understanding and purifying it, as far as may be at the outset, so that it may apprehend things without error, and in the best possible way."

But the individual cannot compass this great aim of himself, he must use the heritage wrung from Nature by universal experience. Nevertheless, and inevitably, a "HE" must do this—abstract ideas are not found energizing down our avenues. Accordingly, from this standpoint, the educational problem may be envisaged as the unification of social achievement with individual initiative. Nobody can fail to see that, in one aspect of it, this is just the problem of heredity and variations, or modifications. Institutions—the school being a fair representative—tend to become static, and to treat folk as means; whereas, the dynamic of individual power alone possesses virtue to innoculate the old stock with the asepsis of wellbeing. For, those persons who voice the best in the group are, to quote Prof. C. H. Cooley's important forthcoming book, "nearly always superior, for the purpose in hand, to the average capacity of its members." How far we miss a solution of this fundamental problem may be gathered from a pronouncement, published this very week, by one of our foremost biologists.

"It would be an interesting subject to debate whether we could nurture such a man; whether a Darwin, were he entered at a Columbia, a Harvard,

a Princeton, could develop mentally as Charles Darwin did at Cambridge in 1827. I believe that conditions for the favorable nurture of such a mind are not with us. They are, repose, time for continuous thought, respect for the man of brains and of individuality and of such peculiar tastes as Darwin displayed in his avidity for collecting beetles, freedom from mental convention, general sympathy for nature, and above all ardor in the world of ideas. If the genial mind can not find the kindred mind it can not develop. Many American school and college men are langhed out of the finest promptings of their natures. In short I believe our intellectual environment would be distinctly against a young Darwin of today."

We teachers, oppressed by institutionalism, too often succumb to a defect, noted also in the Darwin connection, and right caustically, by the President of the New York Academy of Sciences.

"It happened, merely, that what most of his teachers were prepared to impart he was not constituted to receive; and so one of the acutest observers the world has ever known was thought to be inattentive and unreceptive. During all the school days of his childhood . . . not only were his superb mental gifts wholly unrecognized, but no attempt was ever made to find out if he had any such gifts. . . . The one ceaseless effort of his schoolmasters was to crowd him into the common mold."

How long, O Lord, will these things be? How long will we rest satisfied smugly with a mechanical system calculated to drag the average man up to a very average level of average social competence, and neglect vital energies of the inner spiritual life? How long will we confuse a certain "breathlessness of effort" with "quiet and assured power"? In this respect, we have still to confront a most troublesome problem of method: how can the best that the *continuum* affords be reimpressed upon individuals without undue danger to their initiative? Solve it, and you grasp a most specific hope. Another problem also lurks nearby. It relates to the question of educational values, and might be put thus: How can we keep the average man in the stream of the *continuum*, and, at the same time, system notwithstanding, *humanize* him specifically? Beyond question, we must exert tireless effort to naturalize *all* citizens in the main medium of our civilization. But this culture, as we assert constantly in our too frequent fits of vainglory, looks to the *future* for its portion. Likely enough, things may so run, but upon one condition only. Exceptional individuals must serve themselves bearers of the dawn that is to the noon that is to be. Schools for the deficient we have—a tribute to our pitifulness; schools for apprenticeship to our familiar arcs of vocation we have, and to spare—a tribute to our practical adroitness. But, where are our schools for the efficient, for the ten righteous men who, peradventure, will save the city? Echo answers, where?—a tribute to our incorrigible lack of foresight. "The trouble with us is the prevalence of a sprawling, gossiping self-content that does not know or care whether such things as manners, art, and literature exist or not." We tend to shout

for joy as we hand munificent endowments to that most subtle species of rot—dry-rot. But we have evolved no scheme for the eduction and selection of the initiative that can be bestowed upon us only by the higher initiates; that is, we have never so much as thought about one entire half of the "Heredity" problem. We starve the idealist, because we cannot detect immediate dollars bulging in his jeans. Our schools are *common!* This indicates at once their besetting sin and their constant opportunity. For, Education, if it rise to the height of its mission, must have concern, not merely with equality of instruction at the moment, but also with quality of manhood on the morrow. Its raw material, while formal and fiscal, on one side, cannot but be organic and racial on another.

Hence, I live in fervent hope that, when the facts of "Heredity" become generalized on the educational level, when, in particular, we command some valid knowledge of the laws peculiar to the socio-psychological plane, especially in its wonderful "lifts," the causes of our present discontents may be diagnosed and overcome. The humanist, panoplied with the research we have bestowed upon everything except ourselves and our own creations, will then be in position to announce a new commandment. Equality to the equal, inequality to the unequal, and all for the preservation of the larger whole. Such a law, as I humbly think, roots in the nature of the case. For, as one serene, sweet master has noticed and said, "all human culture, spiritual as well as natural, hangs upon inequality of souls."

CLASSICAL AND HISTORICAL CONFERENCES

BEGINNINGS OF MICHIGAN.

HON. C. M. BURTON, DETROIT.

It has been said that the history of modern France began with the opening of the seventeenth century. The wars of the League were ended, and the career of Henry the IV, the Great Henry, with the ministry of Maximilian de Bethune, the Great Sully, was rapidly coming to a climax. Under the leadership of such men, with the Edict of Nantes in full force, it seemed that France was prosperous and her people happy. But the knife of the Jesuit assassin Ravaillac took the leader, and the country became the football of Marie de Medicis and her favorites until the master hand of the Great Richelieu again gave direction to her national affairs.

The aristocracy of France was rich; the people poor. Continued wars had devastated the country, and religious contentions had separated

families and caused enmity between fathers and sons; between mothers and daughters. The young men and boys driven from their homes, because there was nothing for them to do there, engaged as sailors and adventurers to visit the new world.

The stories told by returning travelers and adventurers from these trips set France aflame and her younger sons were soon crossing the Atlantic and penetrating the American continent wherever she could claim a landing place. Among the more enterprising of these adventurers in North America was Samuel de Champlain. It is said that he made his way into the wilderness as far as Lake Huron as early as 1615. It is not at all improbable that he did this, but his return to Quebec left the West a still closed road and no great amount of information was gained by this early exploration. In order to make permanent advancement by these explorations it became necessary to establish Quebec and fortify it in such a manner as to protect its inhabitants against Indian attacks.

Taking this city as a stronghold to which to retreat in case of danger, the French proceeded up the river, founding and fortifying Three Rivers, Montreal, Fort Frontenac (where Kingston, Ontario, now stands), and Fort Niagara, both above and below the falls. It took a good many years to make progress even this distance, but when these posts were established they were so fortified and protected that the Indians scarcely dared to attack them.

At a very early date Champlain had taken the part of the Algonquin Indians in a quarrel between that nation and the Iroquois confederacy. The assistance rendered by Champlain accomplished the defeat of the Iroquois, but the hatred of the French engendered in the Indian nation was so great that it was never eradicated. The immediate result was that the Iroquois formed a friendship with the Dutch of New York and from that time forward for nearly a hundred years, no lasting peace ever existed between the New York Indians and the French. This quarrel might seem trivial to us and perhaps, at the time, it did not greatly trouble Champlain or the French of Canada, but it, nevertheless, had a very depressing effect on the early French voyageurs.

The Iroquois Indians were located in the Northern and Western portions of New York, and they had possession of Niagara Falls and of the land on both sides of the river. They were fierce and warlike and were constantly at war with the Algonquins. The latter, a nation of many tribes, occupied the lands north of Lake Erie. Neither nation was in the actual possession of the country near the east end of Lake Erie and that came to be known as the Neutral Ground, for no one could hunt or live on it without danger of being attacked by one or the other of these nations. The result of this continued warfare was that the French explorers, when they started from Montreal to go to the west, took the Ottawa route as the commencement of their travels.

The Ottawa river enters the St. Lawrence river at Montreal and the French explorer, taking his canoe and outfit, passed up this river to the head of Lake Nipissing and thence across the portage to the lake, down the lake and its outlet, the Pickerel and French rivers, to the Georgian Bay. This was probably the route pursued by all of the explorers up to the time of Groseilliers and Radisson, that is, up to the year 1650.

The early adventurers proceeded by the Ottawa route, and the lake route, that is the route by Ontario, Erie and Niagara was unknown, or at least unused. Mackinac was settled years before the French had navigated Lake Erie and even after they were familiar with this lake, it was some time before it was known that there was a connection between Lake Erie and Lake Ontario.

The repetition of the stories of Champlain, Brûlé and the other explorers in France, brought out a crowd of new adventures and soon the entire peninsula of Canada was visited by these people. There were several classes of these visitors, mostly young men who left their mother country because they could find no profitable work there, or because they loved the life of adventure which the opening of this new country gave them.

The probable first comers were the adventurers called *coureurs de bois*, or bush rangers. They attached themselves to some Indian tribe, learned the language sufficient to make known their wants, and wandered with them on their winter hunt. They proceeded as far into the interior of the country as this tribe would go and then sought some other nation still farther to the westward and so kept on their westward journey until the wanderlust was cured and they found their way back to civilization. Many of them never wanted to return and spent their lives with the Indians. They belong to the class of men that is uncomfortable under the restriction of civilization. They did not all live among the Indians for the purpose of trade or of worldly gain, but rather for the life of freedom and licentiousness. A great many men sought this life, so many that laws were alternately passed in order to compel them to return to civilization by threats of punishment, and other laws of amnesty were passed to induce them to return in order to obtain pardon for past offenses. They were deserters from the army, the toughs from the lower strata of French life. Among them, however, there were many men of birth and of good families, who sought the forest because of the wild life they could there lead. These men were not in the habit of keeping records of their travels, and of the thousands that they numbered only a few are known, and of these few very little can be ascertained. They lived with the Indians, became members of their tribes, married Indian women, and in the course of time became Indians in all of their characteristics. Among the better men of this class were Duluth, LaSalle, Tonty, LaHontan, and Durantayé. The Indians were not provident. They scarcely knew how to lay aside anything for the time of want. Sufficient for the day was all they asked and the morrow was left to provide for itself. In sum-

mer time they hunted and fished and their squaws raised a little Indian corn, perhaps a few vegetables, such as they had, but when winter came they were dependent upon the game shot or caught in traps and fish speared through the ice. They might have a little dried corn saved from the summer, but this could scarcely be relied upon. If the winter was severe and game scarce, the whole Indian village would pack up and start off to some other locality where they thought food could be obtained. They would fast for days, because they had no food and could obtain none, but as soon as some wild animal was caught or killed, it would be cooked and eaten and in the feast the Indians would make such gluttons of themselves as frequently to become sick from over eating. A day or two of abundance and then followed another period of fasting. In these trips if one became sick and incapable of proceeding with the company, he was left to die and the party proceeded without him.

The French religious orders performed an interesting and important part in the early exploration. The French were intensely religious and no party or settlement was complete without a priest. There were many orders in the Catholic Church and of these the Franciscan was the first to have control of the missionary work of Canada. Numbers of the priests of this order came to the new world and took their places among the Indian tribes, working industriously to convert them from their heathen deities.

The Recollets, a branch of the Franciscans, was established by Champlain and a priest of this order, Father Caron, is supposed to have preceded Champlain on his western trip and to have located himself among the Wyandotte Indians on the eastern shores of the Georgian Bay. These missionaries made their homes with the savages and became their advisors and assistants in many ways. It is said that the Recollets invited the Jesuits to come to America to assist them in their mission work. If that is true, they took a serpent to their bosom to give it warmth and life. No sooner did the Jesuits gain a foothold in the new world than they set about to control the entire machinery of state and to deprive all the other religious orders of any power or authority. They usurped all the missionary field and would have gained a complete ascendancy in political power if it had not been for a few men like LaSalle and Frontenac and Cadillac, who stood firmly for the rights of the individual as against the church as represented by the Jesuit priesthood. It must not be overlooked that the two orders made a great noise in proportion to their numerical strength. Up to the year 1670 there had been, all told, in Canada, or New France, but 67 Jesuit priests and 79 priests of all other denominations. There were many things about the devotion and disinterestedness of all of these priests that we can admire. When they went among the Indians to carry to them the tenets of the Christian religion, they took their lives in their hands and many of them became martyrs to the cause. The names and lives of actual martyrs, those who suffered death at the hands of the Indians would fill a volume and the story of their sufferings

and death would, now, as it did two centuries and a half ago, stir the blood of the hearer beyond expression. Some were simply killed, while others were burned at the stake, suffering all the horrors of Indian torture the meanwhile. Others again were horribly tortured and left alive—left to continue an existence that was but a slow death.

Isaac Joques, a Jesuit, was captured by a band of Indians in 1642, and taken to their home in New York state. His companions were Guillaume Couture, an interpreter, and René Goufil, a surgeon. The interpreter was enslaved and the surgeon put to death. The torture was reserved for the priest. His hands were mangled by the teeth of his captors, he was whipped so severely that he fainted from the pain. He was not permitted to rest at night, on their journey, but his wounds were torn open by the young Indians and his hair and beard pulled out, to give him additional pain, and they more pleasure in seeing him suffer. In pain and agony of body he was forced to bear a heavy burden on the march and when the Indian home was reached, on the Mohawk river, the Indians ranged themselves in two columns and forced the priest to run the gauntlet between them. As he passed, each savage struck him a blow with a whip or stick. He was knocked down by one blow heavier than the rest, but was not permitted to lie prostrate. He was picked up and forced to proceed down the long lane. This torture ended, Jocques was placed on a platform where all could see him suffer. His thumb was now cut off and he was kept in this wounded condition on the platform until night. At night he was taken down, stretched out on the ground, on his back, his ankles and wrists bound fast to stakes driven in the ground and children were taught to place live coals and hot ashes on his naked body. He remained with the Indians sometime, suffering all the tortures that they knew how to inflict. At last he made his escape to the Dutch at Albany, and returned to France. He soon came back to Quebec and despite his former troubles with the Iroquois, resolved to go among them again as a missionary. When he came among them they caught him, stripped him of his clothes, beat him with sticks and cut thin strips of flesh from his arms and back. On the evening of October 18, 1646, they murdered him as he was about to enter a feast room to which they had invited him.

I only mention the name of Joques as an example, there were many others, enthusiastic workers in the missionary field, who suffered lives of torture and deaths of martyrs.

It is not well, however, to think of these missionaries as always martyrs. some of them passed lives of comparative ease and comfort and of great usefulness among the savages. And it is well also to remember that they were tortured because they had violated the laws of the Indians in attempting to convert them from their ancient religion.

Some of the Indian tribes were noted for their docility and kindness, not only to the priests who visited them, but to their neighbors. They spent

their time in hunting, gathering furs for sale to the French, Dutch and English, and in agricultural pursuits. Among these Indians the priests found an abundance of missionary work to employ them.

The Jesuit priests made reports of their work, which were sent to Europe and were from time to time printed, and their stories were thus circulated among the people and the desire to visit the new world stimulated. The number of priests increased and the missionary posts were established all over the lower part of Canada, probably as early as 1641. At least three maps of the Western country were made as early as 1657, giving a fairly good idea of the Western country. The earliest recorded visit of a white man through the Great Lakes and the rivers that join them, is that of Joliet in 1669, and yet we have these three maps of 1650, 1656, and 1657, each giving a fairly accurate plan of all the lakes and rivers. Their accuracy indicates that they were made by persons who had actually passed over the ground, who were sufficiently educated in cartography to draw a plan of their travels and the location of the various mission posts and Indian tribes and displayed a complete knowledge of the land as well as of the water. No text accompanied the maps to indicate who their authors were, but a writer in the "Jesuit Relations" suggests that the maps were made from the descriptions furnished by Brebeuf and Chaumont in 1641.* The other priests, Dollier and Galineé undertook a voyage throught the lakes in the years 1669-70. At or near Niagara, they met Joliet who was coming down from the upper country. Joliet gave them a description of the route they were to pursue and they reduced it to the form of a chart and as they proceeded on their journey, corrected the sketch and made a map that has been of great importance as elucidating the early explorations. At Detroit they found a stone image that was worshipped by the Indians. They broke the image in pieces and carrying the pieces to the middle of the stream, threw them in the deep water. They carried a set of instruments which they used in determining directions and distances for making their chart. From this time forward the travelers through the lakes route were frequent and the pathway became pretty well known. The patching up of a truce between the French and Iroquois permitted LaSalle to fit out the Griffon for a trip across Lake Erie and to the upper lakes in 1679. The Griffon was the first sail vessel on Lake Erie and was the only sail boat on the upper lakes ever made by the French. LaSalle with Tonty and Hennepin and many French laborers constructed this vessel above Niagara Falls and sailed on it across Lake Erie, through Detroit river, Lake St. Clair, St. Clair river, Lake Huron and passed by Mackinac to land at Green Bay. On their passage through Lake St. Clair, the priest, Hennepin, named that lake after Ste. Claire, on whose feast day the passage was made. At Green Bay the boat was loaded with furs and started on its return trip. It was never afterwards seen. The

*The writer is James H. Coyne of St. Thomas, Ontario. See *Jes. Res.* LXXI 373.

travels and discoveries of LaSalle, Hennepin and Joliet are all matters of record. Baron LaHontan came shortly after and remained in the west for some time. His travels are also in print and accessible to all who care to read them. The work accomplished by these early explorers in the way of endurance and perseverance almost exceeds belief. We who think that traveling a few miles on a well beaten road is a task, can scarcely comprehend the endurance required by these explorers in the great distances they traveled and the privations they suffered. In the narrative of Dollier and Galineé some description is given of the way they lived and worked. Upon setting out from Montreal they purchased birch bark canoes, each twenty feet long by two feet wide. Such a canoe can readily be carried by one person, though capable of holding four persons and 800 or 900 pounds of freight. You do not row in these canoes as in a boat, but the passengers and oarsmen kneel upon the bottom of the canoe. There were no stopping places at night except such as were provided by nature. "After paddling or portaging the entire day you find towards evening the fair earth all ready to receive your tired body." It was a common thing then, as now, to overturn a canoe for shelter at night. If winter overtook the travelers they made cabins of the barks of trees. "As to the matter of food," writes Galineé, "it is such as to cause all the books to be burned that cooks have ever made, and themselves forced to renounce their art, for one manages in the woods of Canada to fare well without bread, wine, pepper, or any condiments." The ordinary diet is Indian corn, called in France, turkey wheat, which is ground between two stones and boiled in water; the seasoning is with meat or fish, when you have any." If they chanced to kill a deer or large game they could cure the meat, so as to preserve it, by cutting it in thin slices and suspending it a short distance above a fire until it was thoroughly dried. They had no salt to assist in the curing of the flesh. When they set out on these journeys they carried as few articles as possible, for even a light load becomes heavy through long or frequent carryings. In the introduction to the new edition of Hennepin's works is a description of the way in which that priest traveled. "In winter, a dogsled carried his clothing, and portable altar, while he, involved in gown and cowl, shuffled along behind in his snow shoes; in summer a canoe was his conveyance and Indians and long-haired voyageurs his companions." In his own relation he says: "In the night time I had nothing to cover me but a cloak, and sometimes the frost pierced to my very bones." Food was sometimes scarce and the travelers were sometimes hungry and starving. When Hennepin set out on his trip he took his portable chapel, one blanket and a mat of rushes, which was to serve for bed and quilt. Some of these explorers would leave Montreal with provisions for a few days, and only light clothing, and remain in the woods far from civilization for two, three, or four years. They used water courses and canoes wherever practicable, but in the absence of these they made their way through unbroken forests and countless miles of trackless woodland and

prairie. There may have been explorers who traveled greater distances than did LaSalle, but he made great journeys. He went from Montreal to Niagara with Dollier and Galineé and leaving them at this place, he went to the Ohio river and down that river as far as Louisville. He then returned to Montreal. A year or two later he journeyed to Mackinac and thence up Lake Michigan to Chicago and it has been claimed that he continued his journey to the Mississippi. He returned to Montreal, but soon went to Fort Frontenac. From this place he returned to Quebec and then to France, but came back to Canada and with Tonty and Hennepin proceeded to Niagara, where they built the Griffon and in it sailed to Green Bay. In canoes they went to St. Joseph and then to a point near what is now Peoria, Illinois, where a fort was built. He returned overland to Fort Frontenac—over a thousand miles—but went back to his fort the following year and in 1681 returned to Canada by way of Mackinac. Gathering a few followers he again passed around the lakes by Mackinac to Chicago and then to the Mississippi and down that river to its mouth.

Ascending the river he returned to Quebec and crossed the Atlantic to France. In 1684 he sailed from France for the Gulf of Mexico, intending to reach the Mississippi river, but missed it and landed at a point some distance west of the mouth of that river. He now set out on a trip overland to Quebec, but was murdered by some of his own men before he had proceeded far. It is very probable that he traveled in the countries that are now termed the United States and Canada, something like eleven thousand miles. This in addition to his great sea voyages, and all this over the roughest country imaginable, in heat and cold and dry and damp weather, a large portion of it on foot, and much of it at times when he suffered greatly from discouragement and the oppressions of creditors.

On the map of 1657 above referred to, are laid down Lakes Ontario, Erie, St. Clair, Michigan, Superior and Green Bay.

Many mission posts are located in the peninsula of Canada between the Georgian Bay and Lake Ontario, such as St. Peter, St. Paul, St. Francis, Notre Dames des Anges, St. Alexis, St. Michael, St. Simon, St. Jude, and St. Joseph. No post is indicated within the boundary lines of the present Michigan, nor are the posts at Mackinac, St. Ignace and Sault de Ste. Marie laid down. The materials for the compilation of these maps were sent to France possibly as early as 1641, the first map appeared in 1650. It would seem therefore that up to 1641 no mission had been opened beyond the eastern water line of Lake Huron or the Georgian Bay though it is absolutely certain that explorers and map makers had crossed these waters and had penetrated far up the waters of Green Bay and Lake Superior. The Jesuits made annual reports of their works and these reports being printed at the time, are accepted as evidences of the results of their labor. They are voluminous and contain a mass of chaff, from which the wheat has to be sifted to get at the historical records of the time. They dwelt longer on the conversion of

a dying Indian than they did on the topography of the country or their yearly journeys.

The wars between the Iroquois and Algonquins became so fierce and the results so disastrous to the Hurons, that practically the entire Canadian peninsula was abandoned, and Indians as well as missionaries, were driven across the waters into the two peninsulas of Michigan.

It is unnecessary to catalogue here the names of those first priests and voyageurs who entered the country. Among them were Grosseilliers and Radisson, Menard, Allouez, and Marquette. These men did not come to colonize, but to explore. Several years before the advent of any of them, the Indians from the far northwest made annual trips to the east with boat loads of peltry which they sold to the French. It is highly probable that there were many boatmen and voyageurs who returned with these Indians to their homes, farther west than any known exploration of that date. These men were intent only on their own work, whether it be that of trade or of curiosity. They left no trace of what they had done. The reports of the Jesuits have given them an undue importance in this early exploration. They did not lead the way, they were the followers, accepting the proffered seat in the canoe of some trader who was more inclined to profit from the collection of furs than attempt to convert the heathen. Neither can great credit be given to those wandering missionaries for their devotion to their calling. Marquette and Hennepin and Allouez are better known to us for what they saw and recorded, than for their works in the missionary field.

It was not until a much later date that official reports were made by the military commandants, but there is a class of archives that has not been sufficiently explored, but which will, upon close investigation, reveal much of the now unknown facts regarding these early days. I refer to the Notarial records. These records in Montreal, copies of which are in my possession, begin in 1682, but there were records of this nature as far back as the times of Champlain. When these are obtained we will probably ascertain who were the earliest explorers of this western country.

Sault de Ste. Marie, St. Ignace and Michillimackinac were the places first settled within the boundaries of the present state. These places were not colonies, nor was there any attempt at colonization. The two first named were mission posts only, while at the third, about the year 1679, there were stationed a few troops to protect the place as a trading post. It soon became very convenient and perhaps necessary, that this post should be maintained by the military department for the protection of trade. The other mission posts were not supported by government and would have been forgotten except for the annual reports of the missionaries. They played no important part in the settlement of the country and very little in the civilization of the savages.

A few years later than the establishment of Michillimackinac there was another military post established on the St. Clair river near the outlet of

Lake Huron. This place was called Detroit, or Fort St. Joseph. Its establishment at this point was for the purpose of preventing the encroachment of the English, who were forcing their way upward from Lake Erie. It was from this point, as a lookout, that LaHontan in 1687 saw and seized the English officers, McGregor and Rosebloom, stripped them of their goods and clothing and sent them home with a warning that they and their countrymen could trespass upon the northern country only at the risk of their lives. The establishment of Fort St. Joseph was objected to by the Iroquois and in anticipation that its destruction would lead to a more friendly feeling with that nation, LaHontan abandoned and destroyed the fort in 1688. In 1694 Antoine de LaMothe Cadillac was appointed commandant at Michillimackinac by Governor Frontenac. He was able to get along with the Indians in his neighborhood fairly well, but he saw, as probably others had seen before his day, that in order to preserve the country to the French traders, the English must be prevented from entering it. Cadillac spent three years at Michillimackinac making a close study of the Indians and their habits and learning how to control them.

The only settlements, at that time, within the boundary lines of the present state, were maintained solely for the purpose of protecting the traders and missionaries. There was no colonial attachment to any post. The Company of the Colony of Canada had the right of trading in the Indian country and they parceled out this right by selling congés or licenses to individuals. It was not the purpose of this company or of those who were engaged in the fur trade, to encourage settlements in this district. The wilder the country the better for the fur trade. Cadillac saw a little farther into the future than the officers of the company. He foresaw the time when the British traders and the Dutch from Albany would enter the same field and by producing cheaper wares, undersell the French and turn the tide of furs southward to Albany and New York. In order to prevent this destruction of the Indian trade, Cadillac proposed that a post be established on the Detroit river, far enough to the south to intercept the British traders coming up from below. He went to Europe in 1699 and laid his project before the King. A year later he returned with a permission to carry out his scheme which included the establishment of a colony with his post. In 1701, with 100 Frenchmen and 100 Algonquin Indians he started from Montreal for the Detroit river and on the 24th day of July selected the present site of the City of Detroit and began the erection of his fort. This was the first colony west of Montreal. Always at variance with the Jesuits, he would not permit them to establish a mission at his post. The war of words that soon ensued between Cadillac and the order of Jesuits further exasperated the commandant and he undertook to drive them from the country. He held out inducements to the Indians to collect at his new post and he reports that six thousand of them collected there during the first winter. The post at Michillimackinac was deserted by the Indians and the Jesuits having no

congregation left the place, but before moving away they set fire to the buildings and destroyed them.

Cadillac was intent on making his establishment a place of importance and a post worthy of the great Pontchartrain after whom it was called. The year following its founding, his wife and the wife of his lieutenant, Alphonse de Tonty, came to the place to live. Soon other women came to join their husbands who were already here and then many other families came and the village limits were necessarily enlarged.

In 1704 Cadillac obtained authority to sell lands to his colonists and the farms on both sides of the river were taken up and cultivated and garden plots were given to the soldiers for the same purpose. Cadillac proposed the esablismnt of a school and a hospital; the enlistment of Indians in a company of soldiers; the intermarriage of French and Indians and the attempting to civilize the natives. Furs and maple sugar were exported; an annual fair was held; the village was growing and the people apparently happy and contented.

Cadillac found evidences of copper in the country and asked permission to follow up his discovery and ascertain where the copper came from. The home government would not consent to this, fearing that the people would turn from hunting to mining.

The continued opposition of the Jesuits, who were very powerful in Canada at that time, and the short sightedness of the Company of the Colony of Canada, at length forced Cadillac from Detroit and the place began at once to decay.

A long period of fitful existence followed. Commandant after commandant came, witnessed the gradual decay of the place and left, leaving only as an official report, that the place must soon be deserted unless it received assistance from France. The time came, however, that its location was appreciated. England set up claims to the Ohio region. France claimed the same territory and in order to maintain this claim, she sent Celeron, sieur de Blainville, who had been commandant at Detroit, to plant the leaden plates along the line of the Ohio river, as a warning to British trespassers. This did not prevent encroachments of the English and then the kings of England and France attempted to negotiate the settlement of the boundary lines. It was about concluded that the French territory should extend to the Maumee river and the English should own to the Cuyahoga river and that the land between these lines should be neutral, or a "buffer" state. Just at the time these negotiations were about concluded, the war between England and France broke out. This war ended in 1763 with the complete surrender of Canada to England. In 1750 there was granted to the Chevalier de Repentigny a large tract of land at the Sault de Ste. Marie upon which he was to found a colony. The project of forming a colony was abandoned, though many years later—many years after the new century had begun, the family of Reptigny set up claims to this land and tried their rights in the federal courts, where they were defeated.

Mackinac, which had been rebuilt, continued to exist, but was never of much importance until after the coming of the English in 1760. Then its importance was recognized and a garrison was established there sufficient to protect the traders and awe the Indians. Mackinac on the Island was built in 1781 by Lieut. Gov. Patt. Sinclair as a war measure. The influence of the English, Irish and Scotch traders who came after the close of the French-Indian war was immediately felt all over the west. Within a very few years after the conquest the French were entirely driven out of the Indian trade and contented themselves with the positions of voyageurs and farmers and with living among the Indians and at peace with them. The entire business of the country was soon in the hands of the English speaking community. They also owned much of the farming lands. The war of the revolution was a very exciting matter for the soldiers, but the citizens at Detroit did not take so much interest in it. Many of the citizens there were outspoken in favor of the new government and were punished in various ways by the military department. They were imprisoned, driven from their homes and their property confiscated, carried as prisoners to Quebec and in every possible way made to feel that the colonies were in the wrong and that they were in the wrong in siding with them. It was thirteen years after the peace was consummated between America and England before the territory of Michigan was turned over to the United States. Just before the exodus of 1796, many of the people of Detroit signed a statement in which they refused to become citizens of the United States, but not more than fifty or one hundred people actually left the country. These few moved across the river into Canada, but the great majority remained on the American side and became citizens.

With the coming of Wayne in 1796 and the establishment of the new government there was a great influx of people from the Ohio country. Next came the people from New York and Pennsylvania.

The territory of Michigan was organized in 1805 and then began the rule of the Governor and Judges which continued until 1824. The people of the territory were principally the descendants of the old French families and the Americans who had moved into the country from the other states. After the opening of the Erie canal foreigners, mostly English, Irish and Scotch, began to come in great numbers and one of the most serious objections raised to the state constitution of 1835 was that these foreigners were permitted to vote on that instrument before they had become citizens of the United States.

The constitutional convention was called in May, 1835, and the work in forming the constitution was approved by popular vote in the following October. Objections were raised in congress on several pretexts, to the admission of the state, but all matters were arranged and the state formally admitted in 1837. It was held by our supreme court, and upheld by the supreme court of the United States, that Michigan was a state *de facto* from October, 1835.

LATIN IN THE PREPARATORY SCHOOLS.

REV. E. D. KELLY, PRINCIPAL OF ST. THOMAS HIGH SCHOOL, ANN ARBOR.

In these days when people juggle with fortunes as heedlessly as a child with its playthings, we are likely to become mesmerized and join the ranks of the jugglers. The "get-rich-quick" notion has hypnotized us. Glamis, Cawdor, King; rich, wealthy, a millionaire, are the "voices" to attract the crowd. Let us get back to normal conditions. I will admit that when we see the god of Mammon transfigured in his millions, we feel like crying out as the Apostles did on Mt. Thabor, "Lord, it is good for us to be here." But we recall that there is something better than Mt. Thabor, and so there is something better, not quite so tangible at present for most of us, but something better than the blessings of a transfigured Mammon.

The study of the classics, and especially of the Latin, gives to the mind clearness, accuracy and precision in the highest possible degree, qualities which are fundamental and requisite for success under any conditions. Furthermore it might be added, that in the schools of long ago the Latin was studied because it contained the principles of sane and sound systems of government, taught respect for order and tradition, exercised a conservative moral influence in upholding authority and the long established customs of society—in a word, tempered equity and public thought. "The Roman writers," says Dr. Shanan, "were the great humanizers of mankind in the infallible characteristics which come from them as inheritances and are as important as their architecture and their sculpture."

I will not be accused of partiality to the Latin because it is the official language of the Church, which endeavors to preserve, in an unchanging language, the unchanging immutable truths which she has received from her Divine Founder. The scholar will find this language an admirable institution in which the unchanging ethical culture of all ages, permeating all civilizations, has been conserved unviolated.

We are assured that one can make money and a living without studying classics or at any rate without the study of Latin. It can not be denied that great fortunes are made nowadays and palaces outrivalling those of Alladin constructed on Michigan avenue; they are the work of the pork packers and other jungleites.

It should be said in passing that the advocates of the Latin desire also the study at least of mathematics and the vernacular as opposed to what may be called the elective system which has been tried, not for 2000 years, but for the last 30 years and which, according to the Educational Review, conducted under the editorship of the worthy president of Columbia, has been weighed and found wanting.

The translation of a Latin classic or masterpiece aids, as nothing else

can do, the development of the student faculties and if this is not the business of the preparatory schools, what reason have they for existence? Studies prosecuted for information which is their content wholly, may come in at any stage, but during the formative period, when as Burke would say the gristle is forming into bone, during the period of growth and fulness the mental faculties should be trained.] I perhaps ought to apologize for going into detail here, but who has not pondered time and time again over the relative value and shading and scope of translations? One is forced to delve back into the etymology of the English and form judgment from the roots of words. Thus a more extended knowledge of our own language is forced upon us and its philology put within our grasp. The memory is developed, the mind is expanded, the judgment is exercised and the vocabulary becomes more elastic. The mind is trained to sift, to weigh, to compare, while all through its work it is confronted with a frame work which is at once artistic, imperishable and unassailable. Just as in that immortal masterpiece of Rafael, the Transfiguration, which has been reproduced in St. Peter's in mosaic, it was found necessary to exercise the utmost prudence and skill in the selection of colors so that the very atmosphere of the author might be preserved, so too the translator of those earlier masterpieces will acquire in time an acuteness of eye and temper that fit him for any polished work under the sun.

But some one may ask, can not all this be accomplished by (for instance) the study of the Romance languages? You will recall in the first place that the Romance tongues have been constructed largely on the Latin and I think we have here one of those cases where the cause is of larger interest than the effect; again "modern languages are largely allied in modes of thought and the meaning is suggested by a group of words taken together; and finally the study of a modern language, as it is cultivated for purposes of conversation, calls rather for a good memory and a well stocked vocabulary."

As for our English masterpieces they are with few exceptions, outside of the Shakespearean drama, destitute either of maturity or perspective and the authors have resorted to artificiality in the shape of crumbling veneer to fill out the long corridor of panel and pilaster every inch of which should ring true to the calls of the ages. I might mention as an example of this Goldsmith's "Vicar of Wakefield." The first view is rewarded with the rich heavy colonnades of classic monolith in fresh modern construction, all of which give way in the distance to the puttering staff work of forced artificiality.

Still further we are told that the study of mathematics develops sufficiently the reasoning power. Run this thing to its logical conclusion and make every mathematician a philosopher—all of which is respectfully submitted to the department of metaphysics for further analysis.

A Roman masterpiece is the "Concurrent action of its several parts to the production of a single effect." This produces in the will the power of concentration, the faculty to shape and train the several arguments to one

logical and consistent result. It gives the power of momentum, rather than an explosive power, it gives reserve power with balance or poise and bars the superficial. I have no hesitation in saying that one who has studied to full advantage the finished products of the Augustan Era of Rome will be a man of well tempered and well balanced habits, scorning the shams and hypocrisy of society and holding for depth of character and fulness of truth.

The Latin is a permanent, unchanging force; it is the "o" point from which language levels may be taken and elevations fully outlined. In the larger number of cases where we wish to be sure of our ground or essay some new detail in our work the primitive point may easily be consulted and assurance made doubly sure. We know we must be right since the imbedded strata of the world's civilization could not be altered during the progress of a single night.

After the arrival of St. Augustine the English scholar and writer develop, but in Latin; and Bede and Alcuin and Anselm and a host of others build up civilization through the medium of the Latin; the footings and foundations of English life are of Latin origin. In fact the English and the Latin have lived so long together that their union ought to be raised to the dignity of a literary sacrament admitting of no divorce. If it should be said that Latin is rather a parent language, and to this view I have no objection, then let us not mongrelize the language of 150,000,000 of English speaking people by denying its fatherhood.

It is not good for man to be alone and neither is it good for a language to be alone. In the study of English literature one is struck with the wonderful impetus which becomes evident in the writing of Chaucer and others after their contact with foreign life. Dante's works teach Chaucer what is meant by form in poetry, there is a new and wider grasp of thought, the sweep of vision is clearer and things are seen in their true nature. He returns to England and writes not English poetry, nor classic poetry, but the poetry of humanity and of the world. For those who look at the Renaissance as the supremest effort of man in goodness and greatness it may be of interest to know that shiploads of English scholars took to the study of the classics and thereby made the movement celebrated, at least from a literary viewpoint, in their native land. The sweet Italian glow of Portia and Juliet and the dignity of the women of Julius Caesar reveal the excursions of the Shakespearean mind into the classic towns of Italy.

In the past our public school system has been valuable in the eyes of pedagogues, only in so far as it resembled the German ordinary schools. The German gymnasia and in fact the whole system of preparatory training is intended to fit the individual for living rather than for life. While the gymnasia do not look upon Latin with indifference, the other schools declare it a dead language and of no account in modern economics. The language of the Caesars and Ciceros was imperialistic but not commercial; the language of the Kaiser must be not only imperialistic but primarily commercial. In spite of this influence which is happily on the wane, some of us I hope will be

brave enough and honest enough to prefer the joy of life, to the job of life, the culture of life to the cultus of life.

I might easily refer here to the views of well known men who declare for the superiority of the classic trained mind, but I am confident most of you are familiar with these names and the list would only mean delay and loss of time under the circumstances. I do wish to quote the late Senator Hoar, however, who under the subject "Oratory," has the following to say: "The value of the practice of translations from Latin and Greek into English in getting command of good English style, in my judgment, can hardly be stated too strongly. The explanation is not hard to find—you have in these two languages and especially in the Latin the best instrument for the most precise and most perfect expression of thought. The Latin prose of Tacitus and Cicero, the verse of Virgil and Horace, are like a Greek statue or Italian cameo, you have not only exquisite beauty, but also exquisite precision."

In these days when the bowels of the earth are transferred over seas in bowels of monster ships, when the business of Hong Kong comes in close competition with the business of every little hamlet in Northern Michigan, when earthquakes and tidal waves and typhoons are registered as easily as the human fever on a clinical thermometer, I believe the scientist can keep busy in trying to contribute to our material welfare; but I still believe that the greatest achievements shall be recorded of him whose measurements of the human mind have been based upon the heroic moulds of the Augustan Era, and who tries to bring man up to his full mental stature in every one of the lapsing centuries.

THE AIMS AND DIFFICULTIES OF BEGINNING LATIN.

CECILE GAUNTLETT, JACKSON HIGH SCHOOL.

First of necessity is that much-discussed aim of laying the foundation for the further study of the language by a thorough knowledge of its forms. That this aim is of prime importance all will agree; but the manner of attaining it is one of the difficulties presented to the first year Latin teacher. The fact that a student can with no hesitancy and in parrot-fashion repeat his paradigms, or that he can name the cases and moods of words in sentences presented by his texts, is not adequate evidence that he knows Latin etymology; the test is if he can build forms from the new words he meets and can translate new sentences involving words and constructions previously studied. In this manner the attaining of one aim will assist in another second only to the first, the gaining of a knowledge of syntax. And here I wish to say that, while syntax is second in importance to etymology during the first year, still not only an acquaintance but an intimate familiarity with the principles of syntax presented by any first-year

book is absolutely necessary to the student before starting his second year in the language. This is assuming that Caesar, which in my opinion is unexcelled for second-year work, or a text of equal difficulty, is to be the basis of that year's work.

So much for the technical aims of the subject. Next comes what I might almost call a personal aim, one which, I think, appeals to every conscientious teacher in any subject but especially to the teacher of a foreign language; I mean the formation of a habit of accuracy. I feel that I cannot enforce too strongly the necessity of this habit on my students, and believe that if cultivated in connection with Latin it will be applied elsewhere. For the beginner in Latin there is room for no such generalities as in History or English, while in mathematics the material is so exact as to require no effort in grasping it. For example, 5 is 5, or 26 is 26, but *causa* is not *causae*, *amantis* not *amandis*, nor is *amaverunt* *amaverant*. The antithesis of this virtue, the inaccuracy of so large a percentage of beginners, is responsible for a great part of the hardship encountered in first-year Latin, the incorrect spelling (especially among the boys), the disagreement of adjectives with nouns, or the repetition of a rule, carefully explained hitherto, in such a way that the point is completely lost. The first duty, and the most difficult, is to make the student realize the seriousness of his fault, that in Latin an answer is either right or wrong and that there can be no half way about it. In History, the fact that Lincoln was president is of value even though the student be ignorant of the date, but in a Latin sentence the fact that the word is dative is of no importance unless he can tell why.

During his work in the grades the student pursues the study of English in its technical aspect, that is, grammar. On entering the high school he practically ceases the study of grammar and takes up English as an art. And at the time he takes up English the student begins his study of Latin, not as a kindred subject but as one wholly beyond his previous ken. For the beginning Latin teacher this total disconnection from anything previously studied and the lamentable ignorance of that former subject by the student form one of the chief obstacles to progress. In the first place English grammar as it is at present taught does not afford the assistance it might to the student, who has not yet attained to much development of reasoning power, in that the English and Latin grammarians, with approximately the same end in view are at variance in the matter of nomenclature. What difference does it make by what name a student learns a certain grammatical form provided he knows what the form is? And would he not be saved a world of trouble if in meeting it in another language it still had the same name? To mention an example of minor importance, the names of the tenses are different in the two languages, and for what reason? An other and more perplexing difficulty encountered in Latin is the gerund. English grammars may incidentally mention the fact, in a note, that the "ing"

infinitive is the so-called gerund but no stress is laid on the matter and by the time he reaches Latin the student has forgotten that he ever heard the word.

Even a worse difficulty as mentioned before is the little real knowledge of English grammar that the high school student possesses. Without doubt he can rise to parse a sentence and glibly announce the literary subject, grammatical subject, complete predicate, incomplete predicate, et cetera, but as to the real relation of the parts and correctness of the forms his ignorance is apparent both in beginning Latin and in English.

Up to this time I have spoken of the difficulties inherent in the subject by itself and in its relation to English grammar; now I wish to mention one inherent in the student and under the present circumstances the most discouraging of all, his disinclination to spend adequate time in the preparation of lessons. It is a fault met with by every teacher of first-year high school students and is occasioned, I think, by the fact that the students have been unused to taking books home in the grades and are unwilling to do so in high school. In Latin there is just so much ground to be covered within the school year and to cover it one must give lessons requiring from an hour to an hour and a quarter by the average or poorer student; and yet every day students who claim that they find Latin difficult will come to class after a half or three-quarters of an hour's preparation. It matters not how little time a student spends provided he has his lesson but if he cannot get it in less time I require an hour and a quarter. Consideration of the matter in schools where I have been has shown that to be a good average time and bright students will not require so much.

These are the difficulties I have found most pronounced. For the two more serious there is an obvious remedy which is successful in schools abroad, and so should be here, the commencing of Latin in the grades. I should not wish to introduce Latin as early as is done in Germany and England, but rather commence the study in the eighth grade, while the student is still studying grammar. Since arriving at this conclusion myself I have found that this is in practice in many schools, notably in Massachusetts. My reason is not that English grammar should be studied solely for its use in Latin as might be charged but that Latin and English might work reciprocally on each other. Beginning in the eighth grade I would spend also the first year in high school on beginning Latin, thus getting altogether the adequate time for preparation of lessons without so great a conscious effort of the student. In this way Latin would cease to be the bug-bear it now is to first-year students of the high school, and would be more generally elected and carried throughout the course.

PROBLEMS OF THE HIGH SCHOOL LATIN COURSE.

SUPERINTENDENT ARTHUR S. HUDSON, BIG RAPIDS.

My point of view respecting the high school Latin course may be assumed as somewhat different from that taken by those who are instructors of the language. A superintendent, presumably, should speedily divorce himself from all sentiment, natural or acquired, either for or against the classics and with cold dispassionate eye regard the subject of Latin as only one of numerous subjects which today demand recognition in the high school curriculum. In spite of a conscientious endeavor on my part to assume this judicial attitude not only toward Latin, but toward all the subjects commonly included in primary and secondary school work, I find myself today regarding Latin as one of the few most essential high school studies. In my finite observation and interpretation about eight out of ten pupils who pass through the high school grades have been designed by Providence for at least two years of Latin. It is deplorable that the divine purpose is so often thwarted.

In most cases, of course, the pupils as well as their parents, do not realize what an essential part of their mental panoply is being omitted in thus slighting the Latin, and it would be unfair to blame them for this want of appreciation of a matter outside of their immediate experience. The responsibility of demonstrating the practical advantages inherent in the study of Latin rests equally upon those of us who teach the Latin and those of us who plan courses of study and advise pupils and parents in regard thereto.

In so far as the problems of Latin-teaching are concerned, that is, in so far as mistakes are being made in the methods of instruction, I can record my observation as a superintendent that Latin is being taught today as satisfactorily as any other high school subject, in fact, far more so than most subjects. The scientific and enthusiastic character of the work being done in our universities and better colleges in the preparation of teachers of Latin is in large part responsible for this fortunate condition.

All this does not mean that Latin is the easiest subject in the high school curriculum, nor that it is always made the most attractive to the pupils. It certainly does not signify that there are not problems yet to be solved.

I shall mention very briefly certain of the problems that have come under my observation.

First—A lack of definite aim on the part of high school Latin teachers. Doubtless the multitudinous lines of thought in which the Latin teacher is supposed to enlighten her charges is in large measure responsible for indefiniteness in aspiration. Formal discipline, history, mythology, Roman law, English diction, technical grammar, literary appreciation, prosody, and ability to read Latin are a few of the bewildering array of results to be

obtained which the teacher of Latin must bear in mind. The situation is very analogous to the burden which geography is called upon to bear in the primary grades, although on the whole geography is not so well taught as is Latin. To be sure, Latin instructors are apt to answer the question, "What is the great desideratum in the teaching of your subject?" by glibly responding, "Ability to read Latin." But the answer comes as though given *memoriter*. The impression is conveyed that what they profess with their lips is not believed in their hearts, or, at least, not practised in their lives. Nor with the breadth of the subject and the difficulties inherent in the language is this to be wondered at.

Now, I believe that the answer referred to is most emphatically the correct one and that the great aim in teaching Latin should be the acquiring of an ability to read Latin. I would constantly emphasize this aim, not that the collateral advantages are negligible, but rather because of my belief that if ability to read the language is made the main issue these other things will be added unto us.

Even in a Latin course covering two years only this aim holds good; not that in this brief period an ability to undertake general reading can be acquired, but an interest in and an ability to read what has been gone over in class might be insisted upon. How many pupils at the close of the second year's work are able to read with facility the text of the first part of the year? With such a personal consciousness of lack of power no wonder the majority of our students do not care to pursue the subject further. Maybe we attempt to cover too much text in the second year's work. Whatever the opinion may be on that point, for reflex influence upon the child, for the creation of a desire to continue the subject, the learner who has an abiding knowledge of two books of the Gallic War is in a preferable condition to the one who under much stress has been able to get over the necessary four books.

But to return to my main contention: we need to re-emphasize reading ability; there is no need to emphasize the disciplinary value of the study, no need to spend five minutes in the Latin class in a drill given simply for its mind-disciplining effect upon the pupil, for the discipline will take care of itself and will come as a matter of course. Besides, as is frequently pointed out now-a-days, Latin possesses no monopoly in disciplinary value. Under existing conditions I should hardly suggest so rigid a rule in regard to the other interests connected with the study of the language, such as mythology, history, etc., but I do believe that, when these interesting digressions occur in the class-room, the instructor, at least, should keep clearly in mind that the digressions—important though they may be—are but the necessary means to the desired end. With the wealth of collateral material at the command of the present day Latin teacher the temptation to forget what the chief purpose of high school Latin instruction should be is very great, particularly in the case of teachers recently out of college.

Another matter which I desire in a general way to mention, really a necessary corollary to reading ability, yet a corollary deserving of special attention, is the acquisition of a vocabulary. I have an idea that our students are unnecessarily lame in this respect. I do not make reference to poor students who are deficient not only in vocabulary, but in every other phase of the work, but I have in mind the better class of learners. The facility with which our best students fail to recall in a new setting, or even in the former context, for that matter, a word which has not been seen for several days is disconcerting, to say the least, and, of course, is hardly conducive to a permanent reading ability. An observation in the assembly room or library of the manner in which the students are preparing their translations, with the fingers and thumb of the right hand holding partly open the vocabulary and notes of the text, and the frequency with which these portions are scanned to hunt down the derived meaning of a word or to light upon a chance translation in the notes form an interesting commentary upon atrophied verbal memories.

The difficulty here is the converse of that noticed in the conduct of English work in both high school and grades, where the constant injunction to consult the dictionary is necessary. I sometimes have wondered whether it would not be a good idea to compel second and third year students to prepare their lessons in texts devoid of vocabularies and then not more than ten minutes prior to the recitation turn them loose on the dictionaries, thereby fairly compelling them to rely upon their own resources and to think for themselves. Their extreme self-abnegation is pitiable. Possibly suggestion from me in this respect will seem presumptuous, but under existing conditions is not the systematic—and I admit mechanical—acquisition of a vocabulary from such a compilation as Lodge's permissible, or, at least, may it not be advisable for teachers in assigning work for the following day to call attention to the root meanings of the new words or of the old words grown cold? One word resuscitated from the cold storage of memory is worth the ninety and nine hastily conned from the lexicon.

In this connection I confess to being old-fashioned enough to long for more of the systematic study of the grammar of former days. Has not the pendulum swung pretty far in this latter-day preaching of acquiring grammar from the text? Is not the natural method being over-emphasized in the teaching of a language which will never seem quite natural to a majority of the students who pursue it? Personally, I am thankful that I was brought up on a more rigorous diet and that in my third year Latin work I was compelled to commit a goodly share of the formal rules in the appendix of Allen & Greenough's Grammar. They have been a present help to me in many times of trouble both as a student and as a young teacher. I can imagine my learned confrères arguing that if I had possessed the first-hand knowledge of Latin literature that I should have had, if I had acquired the delicate ear for the idioms of the language which my opportunities entitled me to, I might not have needed these rules, but the point is I didn't have

such refinements of knowledge, and in the pride of my heart I have often doubted whether my own case was particularly exceptional.

The popular abbreviated grammars of today are perhaps not too abridged. Every secondary teacher realizes that they contain all and more than the child will learn, but have not the same atmospheric conditions which created a demand for smaller grammars induced us to place too little stress upon formal grammar work?

A great purpose in the teacher's mind in the conduct of a second year Latin class should be to foster in all who possess the necessary capabilities a desire to continue the subject into the third high school year. More than all the persuasion on the part of attractive teachers, more than all the depicted delights of an intimate acquaintance with Cicero and Virgil, more than all the counsel of principal and parents, a personal realization on the child's part that he has really gotten something definite out of his first two years' work, that he has acquired power, will lead him to continue the study of Latin. Or, to put it conversely, more students mentally capable of continuing Latin drop the subject at the close of the second year's work for the reason that they feel that they have not received anything definite and tangible from two years of earnest application, than for all other reasons combined. The second year teacher, in my judgment, has no greater problem than this, how to leave in the student's mind a consciousness of something definite accomplished. It may be true that the student at the end of his second year is just in a position to reap the benefit of his hard work of the preceding two years, but that argument is apt to have little weight with him; he wants to be conscious that he has already reaped. Quality should never be made subservient to quantity, if a good third year enrolment is considered at all desirable.

This opens a fruitful theme for discussion, viz., how can the second year's work be made to appear more definite to the student? I can do scarcely more than raise the question now, although embryonic suggestions as to its solution may be found in what I have said concerning the emphasizing of reading, acquisition of a vocabulary, a little more mechanical (if you will) knowledge of grammar, and never subordinating quality to quantity.

In conclusion, the introduction of Latin into the eighth grade, without appreciable attempt to increase the amount of text to be read, will go far to solve this matter of quality versus quantity, but that, as Kipling would say, is an entirely different story.

PHYSICS AND CHEMISTRY CONFERENCES

PHYSICS, FROM THE VIEWPOINT OF THE SUPERINTENDENT.

SUPT. C. H. CARRICK, CHARLOTTE, MICHIGAN.

Of all subjects offered in the high school course, the course in *Physics* is considered the most difficult, and to it are attributed by far the largest number of failures. At it are cast more scowls, and frowns, and epithets, and opprobrious denunciations than all the other subjects together. And, too, this is true not only in the small school, which has but little or no apparatus, but it is likewise true in high schools with well equipped laboratories. More time, more energy, more hard work, more money is spent on it than on any other course in the public schools, unless it be Chemistry, and yet, it has been my experience as a teacher of the subject that it does not give value received; it has been the experience of University instructors that the high school graduates are altogether too long getting hold of the subject as presented in the University, or college courses—and we must conclude that something is radically wrong. We have long since made up our minds that this subject is *not* for the few, but for the many; not for the bright ones but for the dull ones, as well; in fact, that it is *the* subject paramount in our public schools because of its close relation to life. It is not theory, it is *fact*, and our young people need to know the fact.

Conceding that these statements are true, the question is, "What are the reasons for the high school failures?" Is the teacher inefficient?—all general failures are laid to the instructor, as they should be, usually. Is the method of instruction wrong? Is too much required in high school, or, is the text-book too hard?

In the face of the above statements, you and I will agree that when *we* studied this subject in our little one-horse text-book, we liked it. And, better still, we found it not only interesting, but profitable. Personally, I thought it was *the* high school subject. It was this book over which I poured nights. It was this book which kept me busy rigging up all sorts of contrivances to lessen labor, and my mother laughs yet over the time I harnessed her sewing machine to the electric wire,—with astonishing results! It was this book that kept me awake in the dark—*thinking*. Now, when we say that young people—young men in particular—do not have the same enthusiasm and interest in the subject, we must say that we regret it, and, in this spirit alone, do we seek a remedy.

We believe, most emphatically, that the instructor has much to do with the making of the subject interesting to the pupils, and we superintendents all have our own individual characteristic methods of finding out from the

teacher whether or not he likes his subject, his pupils' attitude, and his text; for, if he does *not*, no amount of skill can cover the fact that he does not really have his heart in it, and, therefore, can not get the results that someone else can who is, perhaps not so well qualified, but is more enthusiastic in his work. What his pedagogical method for high school work may be matters little, but it matters *much* if this method does not give the pupil an incentive toward original work along these lines, and a stimulus which may carry him college-ward! His efficiency as an instructor must be rated according to his ability to make this subject *usable*. When, in answer to the question, "What is specific gravity?" a teacher is informed that "Specific gravity is the weight to be compared with an equal volume of water, or that it is the weight of the body compared with the weight of an equal volume," he is set thinking. When another pupil in the same class tells him that "A simple pendulum is an imaginary point hung on a thread," or that "Inertia is that property of bodies by virtue of which it cannot change its own condition of rest or motion," and in a new breath adds for his further enlightenment that, "In other words, it is the negative quality of passiveness either in recoverable latency or insipient latescence"—he is still thinking, but the climax is reached when one of the laws of "falling bodies" is stated thus: "A body will go just as far in the first second as the body will go plus the force of gravity, and that's equal to twice what the body will go."

And what is the reason for this jumble of words—for this jargon of English? There can be but one plausible reason, and that is, that ordinary pupils of the eleventh grade in high school are unable to comprehend the abstruse statement of physical laws, and that if the instructor is unable to change the wording into simpler English and illustrate it with experiments, the pupil will always have a hazy notion of its meaning. Physical phenomena, as such, are new to students, but coupled with the many new terms, principles, and formulæ, which are introduced into their vocabulary for the first time, the subject is sometimes bewildering.

Pupils get least, usually, from those subjects where a "compelling interest" is necessary, and it is too often true in Physics. The same laws demonstrated in our eighth grades at Charlotte, accompanied with simple reasons, have created a marked interest among the boys, and they frequently come to the office with some mechanical contrivance they have worked out. I was somewhat startled one morning not long since to look out, in answer to a school-boy's halloo, and see a lad seated in a low buggy, working, by a lever, the pedals of a bicycle which had been placed underneath, and actually moving along the street at a fair rate of speed! Now, that boy had a usable knowledge and—incidentally—a workable father.

The time was when about 30 per cent of all high school students took the subject voluntarily, and now practically all students (girls at least) take it from compulsion. This should *not be*, and perhaps, even though we have to swing back to a method of instruction that involves more of the descriptive and practical elements, and less of the mathematical, let us do it, at least

if a more wholesome sentiment toward the subject among high school students can be created.

I have been wondering for some time past if we might not be obliged, as we are in some other subjects, to offer an elementary phase,—to better prepare our young people for an understanding of the regular text. If this should not seem advisable, then, by all means, let us have physics a required subject for the *senior* year, when the minds of high school students are more able to grasp it. It might keep some from graduation, for there will still be failures, but there is the greater hope that this larger insight into the mechanical universe will create a desire for further investigation, and will tend to the upbuilding of our higher institutions of learning.

THE RELATION OF HIGH SCHOOL PHYSICS TO OTHER SCHOOL STUDIES.

MISS LOA GREEN, BIG RAPIDS.

A few years ago I thought I was very courageous to even attend the Conference of Physics as almost the only woman present. I could never have promised to appear upon this program but for the fact that as one of a numerous family I early learned that this is a *give* as well as *take* world and felt I had no *right* to refuse to *give* just a little to an organization from which I have received so much inspiration, as well as hints, suggestions, and facts connected with the teaching of both chemistry and physics.

I feel it is unnecessary to dwell upon the relationship existing between these two subjects, as they really overlap since no division line can be drawn. So will call them twins, physics being the stronger twin.

When I started to prepare this paper, I asked the members of my physics class to write out for me the relation of Physics to other High School studies as it appealed to them. We, by the way, have physics in the senior year.

One-third of the class mentioned spelling as a closely related subject, giving as an illustration the greatly increased vocabulary, especially from derivation.

I feel that the spelling of all words which strictly belong to any subject *can* and *should* be taught as part of the subject. Aside from the advantage of being able to spell such words correctly, accuracy and observation are being cultivated.

A still greater number mentioned reading as a very near relative of physics and pointed out that a careful, intelligent reading is necessary in this subject in order to understand what is wanted and what is given. If definitions and laws are understood, these three questions: 1st. What is wanted?

2d. What is given' and 3d What relation exists between these factors? will usually make the solution of seemingly difficult problems possible for very ordinary pupils with very ordinary preparation in mathematics, at the same time impress upon the pupil the necessity of careful, thoughtful reading.

The poorest English student of my class made it clear that English Grammar is at least a second cousin of Physics since the meaning of difficult definitions and laws can be understood if analyzed. This particular young man seemed unable to understand the meaning of the dyne, until he had analyzed the definition.

We will next take a look at physiology. This subject if well understood will furnish illustrations for about 115 definitions, laws, and principles,—some for every subdivision of physics. On the other hand, physics makes a better understanding of the various bodily functions possible.

Arithmetic is an older half-brother of Physics who has failed to do his duty, most of us recognize, but I will not humiliate him by going into details. However, I will say that in my estimation much blame that is laid upon his own brother Algebra rightfully belongs to Arithmetic. If accuracy, neatness and order in arrangement with a proper understanding of principles and formulæ are required in these subjects, a foundation of *rock* is laid for Physics.

Nine of our juniors are taking Algebra over as a fifth subject without credit, because they wanted better preparation for Physics. Many more would be doing so if it were possible with their other work.

Geometry as a sort of step-brother who having done his duty by Physics, will make graphic solutions and the study of light a healthful recreation for the average High School pupil of Physics.

To emphasize the relationship existing between the last three mentioned subjects and Physics I will quote the exact words of one of my young lady pupils, who, by the way, is one of the best in the class: "In the ninth, tenth and eleventh grades the student has had arithmetic, algebra, and geometry, and physics coming as it does, after these have been completed, serves as a reviewer and field of application of all the mathematical principles learned before."

"Physics not only serves as a reviewer and place of application but accuracy becomes a necessity, and the ability to work correctly and speedily is developed as would be impossible in the lower phases of mathematics. The true purpose of mathematics in the High School course is to develop the reasoning powers, and physics bringing all the different principles in relation to each other, helps high school mathematics to its best and highest purpose."

Another young lady, who has surprised me by the ability she has shown in physics, said: "Physics is very detrimental to the progress of other High School subjects. It is so interesting and applicable as it teaches us things we have often wondered about and which most of us have always wanted to

know. It gives us such enjoyment that the other subjects seem dry and uninteresting, we are spoiled for them. We don't take much interest in mathematics, perhaps, we can't see where it's going to be of any use, but alas! how it looms up a hob-goblin of a monster, when we are told to 'stand right there before the class' till we derive a formula so simple."

Still another young lady wrote: "In order to become familiar with this interesting science one must be well acquainted with the English grammar, so that he may properly understand the numerous laws and definitions. He must also have a good knowledge of arithmetic, algebra and geometry, for they are all used continually in solving the various problems. Therefore these are very necessary to the study of physics, for without them there could be no practical utilization of the wonderful and advantageous truths which are all the time being *absorbed* by our *eager* minds."

Physics makes many pupils feel the need of a course in trigonometry, and furnishes a field of direct application which I do not need to describe to a body of physics instructors.

One of my young men pupils wrote in this connection, "For instance in trigonometry physics is indispensable."

Bookkeeping can certainly claim a relationship as in this subject the pupil should get a training which would enable him to tabulate results in a neat, accurate, systematic manner as well as increase his respect for practical application in school work.

The languages, especially Latin has the everlasting gratitude of physics because it teaches pupils what work means. Another relationship was pointed out by one of our excellent language students who wrote as follows: "The relation of languages to physics is that so many terms used in physics are formed directly from Latin and German words, also the mental training which one gets in studying languages is not unlike that gotten in studying physics."

Two other second cousins of Physics are History and Literature as Physics creates a desire for general information which can only be supplied by these two subjects. On the other hand History and Literature are much more interesting for a knowledge of the laws which govern the universe. Physics teaches that certain conditions give certain results while history and literature do the same thing as "cause and effect."

Physical geography as a little brother of Physics has a great opportunity to get the pupil started in the right direction by teaching him how to take notes, how to use and care for simple apparatus, properly, that the laboratory period is a period of work, that fooling is not to be tolerated, and create in him the desire to know physics.

All this may also be said of the sister subjects, Botany and Zoology or Biology.

Manual Training and Domestic Science are near kind to Physics for the same and similar reasons.

In all these subjects observation, reason, memory, judgment, respect for apparatus, the habit of minding his own business and the necessity of truthful reports can be developed to such an extent in the pupils as to make physics come as naturally as the heavy voice comes to the boy and the womanly modesty comes to the girl.

In showing the relation of physics to "Senior Reviews," one of my young lady pupils wrote: "Talk about senior reviews, why it can't begin with physics. We review everything we ever knew or thought, or dreamed and quite often just things we would like to think," while one of the young men wrote: "So in order to get physics one must get everything before it and get it in a thorough manner, then there is no doubt about physics being one of the most interesting subjects ever taught."

In his article, "The Aims and Needs of High School Physics," Prof. R. A. Milliken says: "The development of the power of self-control as it manifests itself especially in industry and application to the mastery of difficult situations" is the second factor in order of importance that is "to give to the rising generation the best possible preparation for perpetuating and improving upon the civilization which it inherits." I feel that one of my pupils meant the same when she said of physics, "It teaches us to be quite worldly and thoughtful and gives us a respect for nature's wonders."

In "The Present Status of High Schoool Physics" Dr. Henderson says that one of the great lessons that our schools should teach is the lesson of self-mastery, and it is one of the qualities that high school physics is pre-eminently fitted to give, provided we do not reform it beyond recognition or possible use." One of my young men pupils expressed the same feeling as follows: "Physics teaches us to be very careful and independent. To notice things in the best way, so that when we get out into the world we will have the principles by which to 'paddle our own canoe'."

CHEMICAL ENERGY, AFFINITY AND VALENCE.

PROFESSOR S. LAWRENCE BIGELOW, UNIVERSITY OF MICHIGAN.

INTRODUCTION.

It has seemed to the writer that there is a lack of uniformity, and sometimes of clearness, in the definitions given for the terms chemical energy, affinity and valence, and that this results in unnecessary confusion of ideas in the minds of students. Precise definitions, correct so far as they go, are especially desirable for first courses, for opinions formed at an impressionable age quickly turn to convictions and it is a hard and time-consuming process to pry them loose, as in some cases we must, before the

student's mind becomes pliable and judicious enough to evaluate fairly, new facts and new ideas, and to follow the advance of the science critically yet appreciatively.

The following method of presenting these ideas has been found to give satisfactory results, both in beginning and in advanced courses, and it has the advantage that it may be built upon indefinitely. It requires no modification, but remains fundamental and useful, even though the student elects to pursue the study of chemistry to the frontiers of the science.

CHEMICAL ENERGY.

There is a force which causes substances to combine and which holds them together, more or less firmly, in what we call chemical compounds. We name this chemical energy, and all chemical reactions are manifestations of it. Its measurement, and the formulation of its modes of action as a mathematical expression, something as Newton formulated the attraction of gravitation, are the main ends of the science of chemistry. No matter what particular process we happen to be studying, we are, in fact, all the time trying, directly or indirectly, to measure and to formulate manifestations of chemical energy. The term "chemical energy" covers then, the central, ever present, most important problem in all branches of the science. If we could succeed in these efforts at formulation, there is no telling what marvellous and practical results would follow. We seem however, to be rather far from this desideratum in spite of earnest efforts extending over hundreds of years, and in spite of the fact that the problem has been attacked from almost every conceivable standpoint. The isolated facts and processes we have studied and recorded are almost countless, the generalizations we have secured are few, and the science is still waiting for its Newton.

It would be interesting and profitable to trace the history of these efforts to formulate the manifestations of chemical energy, but if we began, it would be hard to stop, for in truth, an historical review of the ideas for which our three terms stand is but little less than the history of chemistry. We must avoid this temptation and adhere to our purpose, merely to define what we mean by these terms; and while we shall in one sense fail, for in truth we do not understand this force, we shall find we have defined the problem in such manner that we are in a better position than before to appreciate what has been done and what remains to do.

ENERGY AND ITS FACTORS.

It is a well known fact that we can classify all processes we are competent to study according to the form of energy manifested, transferred, or transformed, and that these forms of energy are few in number. We know and can study mechanical energies (which are conveniently subdivided into kinetic, potential, and so on), heat, electrical energy, light or radiant energy, and chemical energy.

We owe the precious idea that energies may be more efficiently studied and better comprehended if we consider each one as divided into two factors, an intensity factor and a capacity factor, to Macquorn Rankine, whose most important publications appeared between 1853 and 1859. Although this division into factors is doubtless familiar, a simple illustration may not be amiss. If we have a reservoir of water at a height, the amount of work we can get done by the water is determined by two factors; first, the height of the reservoir above the ground (this is the intensity factor), second, the amount of water in the reservoir (this is the capacity or quantity factor). The work we can get done is given by multiplying the height by the quantity, expressed in any convenient units. In other words, the total energy is the product of the intensity factor into the capacity factor, and we recognize this in the familiar expression, foot-pounds.

Notice this interesting and important characteristic—it is the intensity factor alone which determines whether any action will take place. If the intensity factor is such that action will occur, then the capacity factor enters, determining the quantity, setting the limit, to such action.

What we have done with such obvious advantage for the above form of energy, we can do with no less advantage for other forms. For instance, the total electrical energy is equal to the product of the volts (the intensity factor which determines whether transference will take place or not), into coulombs (the capacity factor which tells how much will be transferred).

This division into factors seems always to bring simplification and a clearer insight into our problems, largely because it divides them into parts which can be attacked one at a time, but also because it gives precise definitions to terms about which we may, some of us, at times, feel a little uncertainty. For instance, when we state that the total heat energy equals the product of the temperature into the entropy, we gain an easily grasped definition of the term entropy, which so frequently proves to be a stumbling block for students.

Chemical energy, like other energies, is divisible into two factors and the usual advantages accrue. We may write the general statement; chemical energy = intensity \times capacity, and the question now is, what shall, or can, we insert in place of these general terms intensity and capacity? For intensity we must insert something which determines whether a reaction proceeds or not, and in which direction it proceeds; for capacity we must insert something which sets a limit to the action when it proceeds.

THE INTENSITY FACTOR OF CHEMICAL ENERGY.

Ostwald, in his famous "Lehrbuch der Allgemeinen Chemie," the first edition of which appeared in 1883 and which is as epoch-making for the science of chemistry as Berthollet's "Essai de Statique Chimique" (1803), or as Dalton's "New System of Chemical Philosophy" (1808), inserts the term "affinity" for the intensity factor. One might think this mere substitution of one word for another to be insignificant, but it is not. Until

that time, indeed in a measure since then too, the two terms, chemical energy and affinity were, and have been, confused, often used interchangeably as if synonymous.* Indefiniteness as to ideas to be conveyed by words leads to misunderstandings and to "muddy thinking." It would be well if the term affinity were used, as it now is used by the best authors, to refer exclusively to that factor of chemical energy which determines whether a reaction proceeds or not, and in which direction it proceeds. The word "affinity" is ill chosen, for its true meaning is a relationship, or resemblance, and, as we know, in chemistry "affinity" is generally greatest between most dissimilar substances.

It is not easy to change the usage of a word, and the loose way the term affinity has been applied has nearly spoiled it for scientific use. In such a difficulty, the surest remedy is to discard the word and introduce another. For this reason the term "chemical potential" has been coined and stands for exactly what the term affinity should stand. It has not yet been spoiled by careless thinkers and writers and therefore it is, at present, the best name for the intensity factor of chemical energy.

Here again the temptation is strong to go into a discussion of the efforts to measure chemical potential, but that is a large subject and would require much time and space. It must suffice to say we have found relative, and it must be acknowledged, not very satisfactory, measures for it, in the velocity constants of reactions, in the conditions for equilibrium, in the conductivity of acids and bases in water solution, in the electromotive force of galvanic combinations and so on. These measures are not only relative but apply only when the external conditions, such as temperature, pressure and concentration, are defined and held constant. With all our study we have not yet measured the chemical potential in a single reaction (to say nothing of apportioning the potential between the different substances taking part), in terms as definite as volts or as temperature or as mechanical velocity. We have progressed but little beyond the old "affinity tables" of Geoffroy and Bergmann. Electrochemical series still seem to represent about the best we can do in this direction, and every one knows how imperfect and misleading these are. It is not too much to say that the greatest need of scientific chemistry today is a unit and a method, by which to measure chemical potential, the intensity factor.

THE CAPACITY FACTOR OF CHEMICAL ENERGY.

As regards the capacity factor of chemical energy, we are better off. Ostwald, in the "Lehrbuch" already referred to, said the capacity factor was, evidently, the amounts of the substances present in a position to react, the "active mass" as it is sometimes called; but not simply the weight in grams, nor the concentration in per cent. We have a system of measuring quantities in chemistry peculiarly well adapted to the needs of our work; we find it much simplifies our problems if, instead of grams and percent-

* See the definition of "Affinity" in the Century Dictionary for example.

ages, we express our quantities in terms of combining, atomic, symbol, equivalent, formula and molecular weights.

CHEMICAL UNITS OF QUANTITY.

There is a most unfortunate diversity of opinion as to the meanings of some of these six fundamental terms, and it is impossible to guard against misunderstanding of the topic under discussion without digressing slightly to speak of these diverse opinions. This is not the place to discuss the methods and reasoning by which we arrive at the values for the elements we tabulate in our so-called "atomic weight" tables. But this much is clear, they are based, wherever possible, on analyses and syntheses of compounds, and represent the least parts by weight with which the substances are known to combine; therefore they certainly have a right to the name, combining weights. But this term, like "affinity," has been spoiled by being used in two senses, by some as synonymous with atomic weight, by others as synonymous with equivalent weight, until now it is ambiguous. For these reasons it would be well to discard it and to use the thus far unspoiled, because newer term, symbol weight. "Symbol weight" is to be preferred to "atomic weight" as it does not bring in any theory at all, and it is very difficult to misunderstand it; it cannot be imagined as meaning anything but the weight for which the symbol stands in formulæ and in equations. It corresponds well with the term formula weight, which has similar advantages over the term molecular weight. Symbol weight and formula weight represent the facts of analysis, free from all theory or hypothesis, and their meanings are difficult to distort.

These symbol and formula weights are the units of chemistry in which we measure quantities. They are peculiar to our science just as coulombs or amperes are peculiar to the study of electricity.

The symbol weights do not coincide with equivalent weights. The symbol weight of oxygen is sixteen, while its equivalent weight is eight, and so on. The symbol weight of an element is fixed and constant, while the equivalent weight sometimes varies, as, for instance, in the case of nitrogen. Symbol weights refer exclusively to what we call the elements, while we frequently carry the idea of equivalence and equivalent weights over to radicals and to compounds.

Ostwald suggested that the capacity factor of chemical energy should be expressed in these chemical units, in formula weights, or in what we have just decided to call symbol weights. And he further pointed out that as a matter of fact our laws of definite and multiple proportions, the bases of our selections of these unit quantities, are our great generalizations regarding the capacity factor of chemical energy.

VALENCE.

This idea of Ostwald's can be carried further with profit to include and define precisely and satisfactorily another somewhat troublesome term, valence.

There has been some little confusion as to just what is meant and what should be meant by the term valence, and consequently it is supposed to be a hard thing to define to beginners without inculcating ideas which must later be modified. It seems to the writer that such confusion is due to mixing unconsciously thoughts on the capacity factor with thoughts on the intensity factor and on chemical energy as a whole. Certainly, in no case are the advantages of this factorial system of considering energies more evident than here. We must know, and never forget, that valence belongs in the capacity factor division.

The laws of definite and multiple proportion state the observed facts that a given quantity of a given substance has a definite capacity for entering into chemical combination, a definite quantity of the power for combination, but leave untouched the other factor, saying nothing at all as to the intensity with which substances combine. When the quantity of power for combination, possessed by a given amount of a substance, has manifested itself; *i. e.*, when the substance has combined chemically with a definite amount of another substance, it cannot be made to combine with more, (this is the law of definite proportions), and we say the power for combination is satisfied; the result is what we call a saturated compound. This is the most striking of the differences between the force determining chemical combination and the force of gravitation. The force of gravitation is never satisfied; one body, having attracted another until the two are in contact, continues to attract all others as much as before. Each substance which enters into a chemical reaction has a certain quantity of this power for combination, and the fact that substances unite in definite parts by weight shows that those parts by weight possess the same quantities of this power for combination.

Here we diverge from our usual custom when measuring a factor of an energy. Ordinarily we find a unit for measuring the energy, and then find how many of these units are associated with say one gram of the substance; we just reverse this in chemistry and find *how many grams of the substance we must take to have unit quantity of the power for combination*, and so obtain what we call equivalent weights.

Here we have experimental facts capable of numerical expression. The measurements, like all others we make, are relative only, and there is nothing whatever about the facts themselves to force us to adopt one unit rather than another. We may therefore adopt that unit which promises to be most convenient. We may adopt one gram of hydrogen as the unit quantity of hydrogen, and the quantity of combining ability (not intensity, not "affinity") possessed by that much hydrogen we may then say is the unit quantity of power to combine; the unit in which to measure the quantity factor of chemical energy.

We find by experiment that 35.45 grams of chlorine exactly satisfies the power for combination possessed by one gram of hydrogen, and we say this much chlorine is equivalent to one gram of hydrogen. The quan-

tity of power for combination possessed by eight grams of oxygen, by 4.6+ grams of nitrogen, by three grams of carbon, are severally enough to satisfy the quantity of the power for combination possessed by our unit, by one gram of hydrogen, and we say these quantities are equivalent to each other. 35.45 grams of chlorine just satisfies the power for combination of 23 grams of sodium, and as, when two things equal a third they must equal each other, the quantity of power for combination possessed by 23 grams of sodium must be the same as the quantity of that power possessed by one gram of hydrogen; we therefore say these quantities of hydrogen and sodium are equivalent to each other.

EQUIVALENT WEIGHTS.

In these ways equivalent weights have been found for all elements. Equivalent weights are then weights which contain the same quantities of power for combination, weights which have numerically equal quantity factors of chemical energy; in a narrower sense, weights which have numerically the same quantity factor of chemical energy as one gram of hydrogen.

Let us now ask ourselves what are the numerical values of the quantity factor of chemical energy to be ascribed to the chemical unit quantities, symbol weights, of the elements. As a unit we have adopted the quantity of power for combination possessed by unit quantity of hydrogen. By suitable comparisons we find chemical unit quantities of chlorine, sodium, bromine, etc., all have the same quantity of this power as unit quantity of hydrogen. We say these elements show an equivalence of one. For a time the term quantivalence was substituted for equivalence, but both these words are long and we abbreviate and say their *valence* is one; they are univalent substances. By the same sort of comparisons we find symbol weight quantities of a number of elements such as oxygen, calcium, barium, etc., all have just twice the quantity of power to combine possessed by our unit, a symbol weight of hydrogen. We say these elements have a valence of two, or are bivalent substances. Another group of elements, such as nitrogen, phosphorus, aluminium, etc., prove to have three times the unit capacity to enter into chemical combinations and we call them trivalent.

It is hardly necessary to go further with this cataloging, for it is evident that what we call valence is in truth the number of units of capacity to combine. Valence is then the capacity factor of chemical energy and we may write:

$$\text{Chemical energy} = \text{chemical potential} \times \text{valence}.$$

If we wish to calculate the chemical energy in a given instance, we have to determine the intensity factor, the chemical potential (which we have not learned to do in any absolute units), and multiply this value, not by the number of grams, nor by the number of symbol or formula weights, but by the number of *valences* present.

This broadens the significance of the term valence and increases its usefulness. It puts it on the same plane with other capacity units such as grams, coulombs or calories. If, in your contemplated reaction you have one gram of hydrogen, your quantity factor is one; if you have ten grams, your quantity factor is ten; if you have thirty-two grams of oxygen, your quantity factor is 2×2 or four; if you have 100 grams of carbon your quantity factor, which limits the extent of the action, is one hundred divided by twelve and multiplied by four, or 33.33+ and so on.

This method of systematization has another advantage; it enables us to formulate very clearly the puzzling fact that valence may vary. For instance, fourteen grams of nitrogen sometimes appears to have five units of capacity for chemical combination, sometimes only three. As we have said, it is the intensity factor alone which determines whether a reaction will proceed or not, and we can formulate the behavior shown by nitrogen by saying that three-fifths of its capacity for combination is at a higher chemical potential than the other two-fifths. The whole capacity is always there, but it does not all come into play unless the potential difference is sufficient.

Let us again make use of our first simple mechanical model in illustration. Suppose we have a total of five tons of water in two reservoirs, three tons at a higher level, two tons at a lower. If the outlet of a water turbine is below the upper and above the lower of these two levels, we shall be able to utilize the water in one reservoir only; if the outlet is below both levels we shall be able to utilize the water in both reservoirs. The application of the analogy to variable valence is evident. This does not pretend to be an explanation, only a fairly clear way of summing up the facts.

CONCLUSION.

This exposition makes no effort to go beyond the sure ground of fact in the study of chemical processes. How the two factors, chemical potential and valence, may be further described as modes of motion of electrons, themselves modes of motion, of which we have such good reason to suppose those quantities we call atoms consist; how all substances and all energies may be reduced to terms of motion, *i. e.*, sequences in those incomprehensible concepts time and space, lies beyond our present purpose. We can only express our belief that both chemical potential and valence will one day surely be described and formulated, like all else, as modes of motion.

We have, in this expression: *Chemical energy = chemical potential \times valence*, condensed many facts, diverging opinions and definitions. It is so simple a beginner can easily learn it, and as much of what it means as his teacher thinks expedient to tell him. It is a safe and useful guide to study and to thought throughout chemistry,—in the most elementary courses, in the most advanced courses and in research, as far as the science has progressed.

MATHEMATICAL CONFERENCE

THE FUTURE OF MATHEMATICS.

PROFESSOR G. A. MILLER, UNIVERSITY OF ILLINOIS.

Professor A. Voss of the University of München recently made the following statement: "Our entire present civilization, as far as it depends upon the intellectual penetration and the utilization of nature, has its real foundation in the mathematical sciences."* He adds that this truth finds expression in the ever increasing appreciation of the educational value of mathematics notwithstanding the fact that it is the most unpopular of all the sciences. This unpopularity is not surprising since "unpopularity is an essential feature of a real science," because such a science can be comprehended only through tireless and continued efforts.

An intelligent expression as regards the future of mathematics must be based not only upon the past and the present state of this science, but also upon its real essence. One of those elements which mathematics has in common with some of the other sciences, but which are more prominent in mathematics than in any of the others, is the tendency to use thought in the most economical manner. When one stops to consider the extent to which the efforts to simplify methods, theorems and formulas direct mathematical endeavor, one must admit that the statement "mathematics is the science of saving thought" expresses a great truth, even if it is too sweeping to serve as a definition.

That mathematics is the science which is pre-eminently devoted to the discovery and mapping of routes along which thought may ascend securely and with the greatest ease is supported by the fact that it has the oldest and the most extensive symbolical language. In the introduction to his classic history of mathematics, Moritz Cantor asks the question, "Why has mathematics, since the remotest times, found support, simplification and advancement by means of word symbols, whether these are number symbols or other mathematical symbols?" Although the oldest of these word symbols were probably relics of a general picture language yet it is of great interest that the picture language was retained in mathematics while the alphabetic and syllabic language displaced it elsewhere. Even those who have mastered only the elements of algebra and the differential calculus are in position to appreciate to what extent mathematical symbols tend to centralize and intensify thought.

It is true that some of the roads which mathematical thought has made through great difficulties have been practically abandoned, and that the popularity of many of the others has changed from time to time. Among the

former we may class the results of investigations recorded at the beginning of the oldest extensive mathematical work, viz., the formulas relating to unit fractions which are found in the nearly 4,000 years old work of Ahmes. It is equally true, however, that a large number of the other mathematical roads have been pursued with profit and pleasure for centuries and by great minds in all civilized nations, and, that these roads are universally regarded as leading most directly to an understanding of some of the workings of nature. The vast heritage which these roads constitute may reasonably be regarded to be perpetual.

There seems to be a general impression abroad to the effect that mathematics and the ancient languages constituted the main parts of the curriculums of our colleges and universities a century or two ago. As regards mathematics this is quite contrary to the fact. No knowledge of any mathematics was required to enter Harvard before 1803, and it was not until 1816 that the whole of arithmetic was required for entrance. In 1819 a small amount of algebra was made an entrance requirement at Harvard for the first time, and less than a century earlier the Harvard student began the study of arithmetic in his senior year. With such meager preparation it is evident that very little mathematics could be taught. In Europe the conditions began to improve earlier, but they were not much better in other respects. During comparatively recent years mathematics has made most of its gains towards being recognized as a fundamental science and the study of advanced mathematics in our universities is of still more recent date.

The rapid recent advance in various fields of mathematics have given rise to a very optimistic spirit as to the future. Although we still hold the brilliant discoveries of the Greeks in high esteem, we are inclined to give much more thought and attention to recent work as may be seen from the references in the extensive German and French mathematical encyclopedias which are in the process of publication. The history of mathematics furnishes many instances of the vanishing of apparently insurmountable barriers. We need only recall the barrier created by the Greek custom of confining oneself to the rule and circle in the most acceptable geometric constructions, and the very formidable barriers furnished by the imaginary, and even by the negative and irrational roots of a quadratic equation.

Those who fixed their attention upon these barriers in the past have naturally been led to think that the days of important advances in mathematics were ended and that it only remained to fill in details. Such predictions had few supporters when new methods led over these barriers and turned them into steps to richer mathematical domains. As this process has been repeated so often it has gradually reduced the number of those to whom the mathematical future looked dark. In fact, Poincaré, in his address before the last International Congress of Mathematicians, which was held at Rome in April of 1908, said that all those who held these views are dead.

These facts justify a very hopeful spirit in regard to future progress, but it is necessary to examine them with great care in order to deduce from them any helpful suggestions as to the nature of this progress. Such prognostication clearly demands a mind that can deal with big problems as well as a thorough acquaintance with the past and present developments in mathematics, to insure that the results obtained by a kind of extrapolation may be worthy of consideration. It is doubtful whether any living mathematician would be more generally regarded as qualified to make reliable prognostications along this line than Poincaré of Paris. The address to which we referred in the preceding paragraph was devoted to this subject and we proceed to give some of the main results.

The objects of mathematical thought are so numerous that we cannot expect to exhaust them. This is the more true since the mathematician creates new concepts from the elements which are presented to him by nature. Hence there must be a choice of subject matter, but who is to do the choosing? Some are inclined to think that the mathematician should confine himself to those problems which may be set for him by the physicist or the engineer. If he had done this in the past he would not have created the instruments necessary to solve such problems and hence it is unreasonable to make such restrictions as to the future.

If the physicist of the eighteenth century had abandoned the study of electricity because it seemed to serve no useful end we would not have had the many useful applications of electricity during the nineteenth century. Similarly, if the mathematician had abandoned the study of negative and imaginary numbers because they seemed merely to point to impossibilities, we should not have had the many powerful instruments of thought which enable us to cope more successfully with many problems of nature. Just as the physicist is largely guided in his work by those facts which seem to point to general laws, so the mathematician is guided by the desire to discover extensive relations and widely applicable laws. Millions of isolated facts present themselves, some of which are strikingly interesting to the uninitiated but they are of practically no value in the development of mathematics except that they may sometimes serve as an exercise in secondary instruction.

At a first thought the statement that "mathematics is the art of giving the same name to different things" may appear to be entirely contrary to the facts, but from a certain standpoint this statement conveys a very fundamental truth. It should be borne in mind that these different things must have in common the property to which this name refers, and that it is the duty of the mathematician to discover and exhibit this common property. By way of illustration we may recall the use of x for the various unknowns in algebra and the (1,1) correspondence between two series of operations. When the language has been properly chosen it is often surprising to find that the demonstrations as regards a known object apply immediately to a large number of new objects without even a change of name.

Just as the boundaries between the elementary subjects of mathematics—arithmetic, algebra and geometry—vanish when the knowledge of these subjects is sufficiently advanced, so the boundaries between subjects in pure and applied mathematics are disappearing, and it is exactly in these border lands, or in this common ground of two or more subjects, where the greatest recent progress has been made and where the greatest future activity may be expected. The work on this common ground is made possible by observing similarity of form where there is dissimilarity of matter, or by observing some other point of similarity which is capable of mathematical treatment.

In Poincaré's address such general observations were illustrated by numerous examples chosen mostly from various fields of higher mathematics. On the contrary, we shall confine our illustrative examples to the more elementary subjects. We shall begin by calling attention to certain properties which present themselves in each of the four subjects, arithmetic, geometry, algebra and trigonometry. By observing such common properties we shall see not only a bond connecting these fundamental subjects, but we shall also be led to general methods which will make it unnecessary to study the same properties in different forms. The thing to be emphasized is that these four elementary subjects have in common fundamental notions which not only connect them but also establish contact between these and many other subjects.

To illustrate such a connecting link we may use the group of order 8, commonly known as the *octic group*. As the geometric form may appear to be the simplest, we shall begin with an illustration of the octic group in elementary geometry. It is evident that a limited number of distinct movements of the plane transform a given square into itself. In fact, there are just eight such movements including the identity. Two of these eight movements are of period 4 and five of them are of period 2. The latter are composed of the four rotations through π around lines of symmetry of the square, and the rotation of the plane through π . The last one is the second power of a movement of period 4.

At a first thought it might appear as if these eight movements could have nothing in common with trigonometry, but further considerations will reveal a very fundamental connection. Starting with a general angle A and deriving all the possible angles by taking the complement and the supplement of A, the complement and the supplement of the resulting angles, etc., until no new angle can be obtained by this process, there result the following eight angles: A, $90^\circ - A$, $180^\circ - A$, $90^\circ + A$, $-A$, $180^\circ + A$, $270^\circ + A$, $270^\circ - A$. If we consider the operation by means of which each of these angles may be derived from A, it is clear that we again have two operations ($90^\circ + A$, $270^\circ + A$) of period 4 and five of period 2 in addition to the identity. It is natural to inquire what relations, if any, exist between these eight operations and the eight movements transforming a square into itself. That these operations are really identical results at once

from the fact that if the vertex of the angle A is the center of a square and the initial line of A coincides with a line of symmetry of the square, the operations of taking the complement and the supplement correspond to movements transforming the square into itself.

Although the rôle of these eight operations in elementary arithmetic is not as fundamental as that considered above, yet these operations serve to explain some facts which present themselves in the most elementary arithmetic processes. Starting with a given number, say 5, and performing the operations of subtracting from 2 and of dividing 2, and continuing these operations until no new number can be obtained by means of these operations, there result the following eight numbers: 5, -3, $2/5$, $-2/3$, $8/5$, $8/3$, $5/4$, $3/4$. If instead of 5 we had used any other real number with the exception of the following ten: 2, $1/2$, 0, ∞ , $\pm\sqrt{2}$, $2\pm\sqrt{2}$, $1\pm\sqrt{2}$, there would again have resulted just eight distinct numbers, six being positive and two being negative. That the eight operations by means of which each one of these eight numbers may be derived from a given one of them have the same properties as the eight movements transforming a square into itself is not very evident but this fact has been established by more advanced considerations.

An instance where this octic group plays an important rôle in algebra is furnished by a three-valued function in four variables, which is fundamental in the theory of the general equation of the fourth degree. As such a function we may take $xy+zw$. This function is transformed into itself by eight substitutions and we may arrange the letters of this function separately on the vertices of a square in such a way that the eight substitutions transforming the function into itself correspond to the eight movements which transform a square into itself. Such an arrangement exhibits the intimate relation between this function and the movements of the square, and the preceding examples have illustrated the fact that the octic group finds application in each of the elementary subjects, arithmetic, algebra, geometry and trigonometry, and forms a part of the domain which is common to all of these subjects.

In a similar manner other groups could be traced through these four elementary subjects of mathematics and it could be shown that such groups may be used to clarify many fundamental points and to exhibit deep-seated contact. If the common domains will furnish the most active fields of future investigations and if we may expect the greatest future progress to be based upon the modeling of one science on another and the utilization by the one of the progress made by another, it is reasonable to expect that a subject like group theory will grow in favor and that some of the elements of this subject will become a part of the ordinary course in secondary mathematics. At any rate the teacher of secondary mathematics cannot afford to be without the new light which this subject sheds on some of the most elementary parts of his mathematical work.

Recently Professor Bryan, president of the Mathematical Association, made the following statement before a meeting similar to the present one: "I believe Professor Perry will get some very good material for applications out of the Theory of Groups, when explorers have first made their discoveries and when the colonists have been over it and surveyed it, and discovered means for cultivating it. We do not know anything about its practical application now."*

The future of mathematics appears bright both for the teacher and also for the investigator. When a country which has such an advanced and enlightened educational system as France increased the amount of time devoted to secondary mathematics so recently as 1902 and again in 1906, it furnished one of the strongest possible encouragements to the teacher who may have been troubled by the thought that the educational value of mathematics was not as fully appreciated as in earlier years. Naturally we may expect that there will be local changes of view as regards the value of mathematics as an educational subject, and these changes will not always be for the better, but the civilized world as a whole is learning to appreciate more and more the fundamental importance of early mathematical training, so that we should not be too much annoyed by local backward steps, but we should move on with the assurance that we are engaged in a work of the highest pedagogical importance.

The boundless confidence in the importance of early and extensive mathematical training should, however, not blind us to the need of changes and new adaptations. As an important function of mathematical training is the furnishing of the most useful and the most powerful tools of thought, it is evident that the choice of these tools will vary with the advancement of general knowledge. All admit that the concept of a derivative is one of the most useful elementary tools of thought, and in a number of countries this concept has been introduced into secondary mathematics and used with success. At the fourth International Mathematical Congress, held at Rome, M. Borel of Paris reported that the notion of derivative had been introduced into French secondary education in 1902 and had led to satisfactory results. At the same meeting M. Beke of Budapest stated that this notion together with the notion of function and graphs had been introduced into the courses in secondary mathematics in Hungary.

At a recent joint conference of the Mathematical Association and the Federated Associations of London non-primary teachers, the chairman remarked: "I have always thought that a mathematician was a man who when he wants to find anything out, uses his brains for that purpose, whereas a physicist, when he wants to find out anything, resorts to experiment."* Although this statement does not convey an entirely correct impression as regards the domain of mathematics, it does involve a great partial truth and

* *The Mathematical Gazette*, January 1909, p. 17.

calls attention to elements which insure mathematical appreciation as long as there is scientific thought. "It is the mind that sees as well as the eye" and the mind sees some of the greatest truths most clearly through mathematical symbolism. In fact, mathematical symbols serve both as a telescope and as a microscope for mental vision, and as long as such vision is demanded the teacher of mathematics will be appreciated.

HISTORY CONFERENCE

The first three papers are in the form of résumés:

SOME PRACTICAL CONSIDERATIONS ON THE REPORT OF THE COMMITTEE OF EIGHT ON THE TEACHING OF HISTORY.

MR. J. F. THOMAS, WASHINGTON NORMAL SCHOOL, DETROIT.

The course for the sixth grade given in the 1906 report of the American Historical Association outlines a course in European History. The committee made this radical departure from elementary school practice in history because the members were of the opinion "that the pupil must be led to understand that American civilization and institutions had their beginnings under European surroundings, and that the problems of our national life, even to the close of the nineteenth century, were, in a large measure, closely connected with European problems." With this general statement no one will disagree but the point is—whether sixth grade pupils can be led to understand it at all and whether the committee's course accomplishes the purpose in the best way.

The writer has examined the 1908-'09 courses of study of ten progressive American cities to see whether any of them had tried the Committee's sixth grade course, but in no one of them has the attempt been made. The vast majority of schools still begin the serious study of history in grade VII. Many of them have history in biographical form from grades three to six inclusive. Quite a few, however, cover some of the work given in the Committee's course in the regular geography classes.

The seventh grade takes up American History until the close of the French and Indian War and the Eighth grade studies our History since then. Any teacher of American History would value the outline for these two grades. They give a clear treatment of Europe in America and of our national growth. The subject matter is very sensibly selected and grouped.

There are, however, at least five topics in European history that impress one as dragged in by the heels. There is only a very remote reason, for example, for a study of the French Revolution in connection with American History. That kind of forced correlation has proved to be unprofitable.

Some progressive cities have come to realize that the course of study must be a growth and that it must fit class room needs. So their courses are made and constantly revised by local committees whose membership is composed of high school teachers, representing experts in subject matter; superintendent and supervisors, presumably experts in education; and, most important, teachers who are working in the grades for which the course is being prepared. Such a group welcomes such work as that of the Committee of Eight with enthusiasm but realizes the need for adaptations. It is through many such adaptations that we shall come to have the ideal course, but it cannot be a uniform course nor static.

The ideal course will give required optional and alternative work to meet different social and industrial needs. It will be a detailed syllabus, with references by pages, and will give suggestive types of lessons in order that the teacher may be saved unnecessary mechanical work and that the weak and ignorant teachers may be helped. It will put more emphasis upon social and economic history and less upon the purely political.

A test of any group that has left history for a semester or more shows that most pupils retain too little definite historical knowledge. This is due to a number of factors, some of which are: (1) Our courses attempt too much; (2) Too little correlation within the subject; (3) Piecemeal, day-to-day, teaching of topics, rather than of the subject as a whole; (4) Not enough repetition and tests; (5) Basis is not concrete enough; (6) Poor class management; (7) No general agreement upon what habits history teaching should establish and what ideals it should form. It is probable that the final report of the Committee of Eight, promised for this year, will help us to better our teaching in all these points.

MISS ALEIDA J. PIETERS, PONTIAC.

The report on the Teaching of History in Elementary Schools plans the work to be covered in the sixth, seventh and eighth grades. This includes children whose average ages are from eleven to thirteen years.

According to experts, like Dr. G. Stanley Hall and others, children at this age should be taught History by means of striking incidents, biographies and events with abundant use of maps, charts and pictures.

In the course of study, the Committee has planned to teach American History, with a brief outline of European History in order to give the child the necessary back-ground to the History of his own country. In the sixth grade, they give a brief outline of the World's History from Pre-

historic Greece to Raleigh's attempt at colonization in America. In the seventh grade, they include the exploration and settlement of North America, and the growth of the colonies until the close of the Revolutionary War, with somewhat of the European background for the events in America which depended on those in England or Europe. The eighth grade includes the period from the Treaty of Peace until the present time.

The theory of this plan is splendid, and if the child were sufficiently mature, would give a correct view of American History, but to my mind, it has several grave defects.

In the first place, they attempt to cover too much ground in the first year's work. The child's mind is not mature enough and has not sufficient information to grasp so many new facts, and retain them with any degree of clearness.

Again, the subject matter chosen is in some cases too difficult for a child to comprehend, as that dealing with Rome and Christianity, Sec. 3, of England in the Days of Elizabeth, Topic xxvi, Sec. 3.

Then too, there are too many important people introduced for the limited time of study. If we are to aim at making these children feel that Elizabeth, Raleigh and Sir Philip Sidney were real, live people, we must have time in which to get them acquainted, and that cannot be done, with twenty-eight different people in the short period of the discoveries.

During the whole three years' course, it seems to me that too little emphasis is placed on the stories which are the heritage of the children; on the literature dealing with the period, and on the increasingly popular method of dramatization, although it is possible that the Committee thought that the teacher would supply this, but if so they give her but little time for it.

In the work of the seventh and eighth grades, the chief defect lies in including European History which is too difficult and confusing for the child, as the Religious wars in Europe and the series of wars between France and England for colonial empire, and in the nineteenth century the wars for unification in Europe and the development of Great Britain.

On the other hand, there is much to be said for the report. It brings out clearly the life of the time in Greece, Rome and the Middle Ages, and the presentation of the first settlement, including the religious and political condition in England is good. In the eighth grade work an especially excellent feature is the industrial question of the past century.

As it stands, I do not think that the report could be used in schools in which the pupils come from the average American homes.

POINTS OF EMPHASIS IN ROMAN IMPERIAL HISTORY.

DR. F. B. MARSH, UNIVERSITY OF MICHIGAN.

Dr. Marsh disclaimed any attempt at drawing up a list of points of special emphasis and attempted rather to suggest certain general considerations which should influence the teacher in determining how much of time and emphasis ought to be given to the various subjects treated.

Since one use of the study of history is to teach the students historic mindedness and lead them to see how cause and effect have operated in human affairs in the past, he urged that special care should be taken to bring out this side of history. It might even be well, it was suggested, to leave out those events whose causes and results could not, for one reason or another, be dealt with in a given class. Thus the extension of Roman citizenship to the provincials by the Emperor Caracalla should either be omitted altogether, or the teachers should go further and show at once the emperor's reasons for the act, and its consequences to the Roman world.

As one of the chief uses of historical study is the understanding of the present, it was farther urged that the points to be chiefly emphasized were those which had affected in some way the general body of Western Civilization. As illustrations, the Roman Law and the Christian Church were cited, as being institutions which survived the political disintegration of the Western Empire. It was upon such institutions and upon their gradual development that the chief emphasis in Roman Imperial history should fall and of these the church was suggested as in many ways the most important. But the writer further suggested that the church should be viewed constantly as a part of the Roman society of the time and those things in Roman society should be especially noted that conditioned and influenced the development of the church. As an illustration he suggested that the persecutions of the Christians be treated as evidences of a general policy toward the church on the part of the Roman authorities and that an effort be made to lead the student to see clearly the reasons influencing the Roman government and the effects of that policy upon the church itself.

APPLICATIONS IN HISTORICAL TEACHING TO MODERN CONDITIONS—ANCIENT HISTORY.

MISS LUCY ELLIOTT, EASTERN HIGH SCHOOL, DETROIT.

Do you think there is a discerning mind in the profession of teaching today that does not feel we are standing on the threshold of many changes in the public schools, both as to organization and curriculum? Public schools are everywhere criticised, from the superior women's club to the corner

grocery; from the columns of the most conservative magazine down to the "news items" of the sensational daily newspaper. They are found guilty, first of all, in their results. It is said the child acquires neither knowledge nor the ability to work on his own responsibility, from either a grammar school or a high school course. Again, they are charged with teaching too many subjects, and teaching none of them thoroughly. The students' aim is only to pass and the teacher's to have as few failures as possible on the term's record.

The student's attitude toward his work, his lack of appreciation of it, and of his opportunities is said, by the most pessimistic critic to again be the fault of the school. The other day I was laboring with a boy of fifteen, who was repeating a course. I asked why he was so indifferent to his work, why he had changed so much since the days when he had been in my class in Course I, his answer was, "I've learned a good deal since then," and his attitude was one of lofty scorn for himself because he had once been interested and faithful. I pressed a bit further, and found that among the many things he had added to his store of wisdom, the most important was, "who the easy teachers are," tactfully explaining that he hadn't begun taking them yet. This attitude of mind is a product of the high school, consequently the school must be to blame.

Aside from these indictments, there is the stinging one presented in the case of a girl who before graduation, had creditably completed eight courses in French, but was unable to make any conversational use of her accomplishment. Her father said, "Oh! you know girls and boys don't go to high school to learn things any more, just to graduate." How far this criticism is just or unjust, true or false matters little to us, except to bring home more forcibly, if possible, the fact that we are facing a new era and that public school criticism is only an echo of the trend of shifting modern conditions.

Of all the modern products of this modern age, I doubt if we can find anything more thoroughly modern than the average high school boy or girl. The mere being alive necessitates being modern in the sense of up-to-date. We, who are no further removed from the high school than five or ten years, feel that we and our way of doing things are objects of pity to our little brothers and sisters. I remember so well our grandeur at graduation time, when we came forth to be admired of our friends in one new white muslin dress, but now, I am told, yet do not understand, that instead of the more recent innovation of two gowns, one for class day and another for graduation, that a third, along with its accessories, has entered the festivities, a gown for the class party. If it were only at the close of the high school course that we find such startling evidences of the complication of our modern conditions, we might feel less concerned, for are we not the faculty and could we not legislate so as to bring about necessary reforms? But it is through the whole four years that we find the little foxes among the vines. It used to be a real joke, uttered in a mood of ironical humor—"never to allow one's college course to interfere with one's social engagements." But

alas! that day is over, and now the old joke is taken literally, for who has not been asked in perfect sincerity, to be excused from reciting today, because we had company last night or because we went to a party, or to the theatre, or church entertainment? Nor is that the fault of the children. They are the product of their environment. We were trained when parents felt it their civic and christian duty to keep their children in school, and made many sacrifices to do so, but now the school life is often made secondary to the convenience of the parents or the children. However, it is quite futile to rail against existing conditions, or allow one's views to become pessimistic. The age is a different one from that of the previous generation. The result I believe of the shifting ideals of values—the things worth while—and I believe we can do most toward eliminating the non-essentials in the lives of the coming men and women, by squarely facing conditions as they are.

With proper application in historical teaching to modern conditions we can accomplish a two-fold task; fill our ancient history class with interest because we show that the present has been born out of the past; and, perchance, aid some boy or girl to see the difference between the essentials and non-essentials—or to get his proportion of values in a sane perspective.

How can we spend the time when our classes are now limited to only four hours? We have already given one hour a week over to the gymnasium, sewing and manual training classes, and that is just the rub. We have already given away to the trend of modernism, and unless our history classes are filled with human interest, and we ourselves show that our lives are larger than our work, we shall be giving up another hour to the cooking and the forge classes, and find our courses are no more sought after than the Greek and advanced Latin classes. Of all the courses in the high school curriculum, history most of all can be humanized and modernized. Unto us have been given the five talents, but with the present trend of conditions, are we justified in burying them under the ruins of our shattered ideals, that the history of the Ancients should be learned for its own sake? The attention of the pupil finds little opportunity to focus itself upon his thirst for knowledge. There are too many diversions.

When one sets out in good faith to find analogous situations in the known or present conditions of the pupils' life and the conditions in the lives of the Greeks or Romans, it is surprising how interesting the task becomes. The Homeric age takes on more meaning when we suggest that we are as dependant upon Homer and his poems for the legendary history of Greece, as we were dependent upon Lief Ericson and the Norse sagas for the pre-historic data of American History. Moreover that the legends of this period furnish us with exactly the same sort of information about the Greeks that Hiawatha does about the Indians. One can go even farther, when an especially long or difficult lesson has been assigned, and suggest that we might all seek the patronage of the grey-eyed Athena; such a remark is smile provoking and has at least the value of being personal.

Undoubtedly one finds it most difficult to explain the Greek govern-

ment in terms of our own, because the average child or adult for that matter, has so little conception of the function of our government. The texts are not always lucid either. One author, in speaking of the government of Sparta, says it may be called a "democratic oligarchy," which, I believe, means very little until the suggestion is made that we would have the same kind of government if the right to vote were limited only to those who could produce the proper credentials to entitle him to become a Son of the American Revolution, or to those whose ancestors had lived here three generations.

In studying the manners and customs of the Romans and Greeks we can make the picture of Greek life clearer by asking the pupil to name the conveniences in his home that he would have to do without, had he been an Athenian boy, or what kind of clothes he would have worn had he lived in Sparta. By contrast, the authority of the Roman father over his family makes the average American household look pale and weak, even to the child reared under strictest rules.

In studying wars, especially the Graeco-Persian, the nearest one can come to applications is to emphasize the advantage of their results to our civilization. To the question "Which country won in the Graeco-Persian wars and why should we be glad she did?" I found this delicious answer: "Greece won and kept Grecian culture from being tainted by gaudy Oriental styles."

In discussing the Alexandrian conquests, I have found much interest manifested in answering the question as to how far we have carried out Alexander's ambition to have one empire, one race, one religion and one language. I believe the first time I asked this question I was quite surprised in having one girl volunteer a good bit of information regarding Esperanto, as an illustration of the one language.

When we turn from the Greek to Roman history, one finds even more abundant opportunities of making applications to present day conditions. In fact, I heard a history teacher of a broad and deep experience say not long since, that the field of Roman history was unique in its possibilities of bringing the life and policies and government of the old Romans down to our times.

The qualifications necessary for holding the office of president of the United States can be suggested in connection with election and qualifications of the consuls. The other day one little girl sadly shook her head and said she didn't know she had any rights at all, legal or economic, when she was asked how many more rights we had than the plebeians did. Don't you think there was at least interest and meaning to her in hearing her contemporaries tell of their rights of free speech, education, protection, etc.? Rome's method of governing her colonies is not unlike England's, and the Dominion of Canada is near enough us to be a shining illustration of at least one English Colony.

In connection with Rome's policy of trade in her colonies, a happy illus-

tration can be made by using a past event in American history. Just ask what England's navigation laws in the colonial period were, and see how quickly the similarity will be recognized by the class.

It is often hard to make students appreciate the difference between the local rights and the rights of a full Roman citizen, but they will readily tell you that every citizen of Detroit helps to govern the city, the state, and has his share in national affairs as well.

Just what is meant by public lands is rather vague until one asks what land is there within the city limits that the people enjoy in common. And almost at once we have the names of the various parks suggested. Then the parks belonging to the state; and, if I am not mistaken, the national parks, forest reserves, and public lands which from time to time have been taken by private citizens from the government for homes, will be mentioned. The reforms of the Gracchii are usually disapproved of, when our own methods of dealing with cases requiring charity are brought to mind.

In summing up the Period of the Republic, a forcible lesson can be brought home to the citizens of tomorrow by asking that the things, which make it impossible for the republican form of government to continue, be named. It can easily be shown that the fall of the Roman republic was due to the spirit of lawlessness, and a disregard for law, especially when exceptions are made in dealing justice; to bribery in the political world; because people preferred wealth and position to honor; because voters became apathetic and ignorant and a few men were given the opportunity to get control of the government.

In the study of the Teutonic Barbarians before their migration, it is easily shown how the mark-moot has become the township and why our own township elections are held in the spring of the year.

These are then some of the ways in which the ancient history course may be translated in the terms of present, up-to-date conditions. Possibly you ask, is it worth while or is it necessary? To such a question it may be said that no less eminent authority than George Herbert Palmer in his volume, "The Teacher," in discussing the qualifications of the ideal teacher, says: "One needs a third something, the power to invigorate life through learning. . . . Truth being impersonal seems untrue, abstract and insignificant. It needs to shine through a human being before it can exert its vital force on a young student. Quite as much for vital transmissions as for intellectual elucidation, is a teacher employed. If he be a scholar, there will appear in him an augustness, accuracy, fullness of knowledge, a buoyant enthusiasm even in drudgery, and an unshakable confidence that others must soon see and enjoy what has enriched himself; and all this will quickly convey itself to his students and create attention in his class-room. Such kindling of interest is the great function of the teacher. If pupils cared to learn, there would be little need of teaching. Our chief concern is with those who are unawakened."

In history classes this interest, it would seem, can most naturally be obtained by applications to modern conditions, for after all what is the real aim in the teaching of history if it be not what Prof. James says in his report of the teaching of history in the elementary schools: "It is believed that a leading aim in history teaching is to help him to help the child to appreciate what his fellows are doing and to help him to intelligent voluntary action in agreement or disagreement with them. To accomplish these results there must be continuous attention in each of the grades to contemporary problems, suitable to his intelligence and also attention to events in the past that he can understand. The following fields of human activity must furnish these events, political, industrial, social, and religious. Not one of these should exclude the others."

If then this be our aim to lead the child to a more thorough appreciation of his fellows and we ourselves are endeavoring to invigorate life through learning; surely, we can only hope the time will be hastened when the critical sentiment against the aims and methods of public school teaching will become crystallized into effective organization against its defects, for at that moment, our ideals will be emancipated from the slavery of precedent and then "shall each draw the Thing as he sees It for the God of Things as They are."

POINTS OF CONTACT BETWEEN ENGLISH AND AMERICAN HISTORY.

MISS LULU B. SOUTHMAYD, DETROIT CENTRAL HIGH SCHOOL.

Discussing the points to be aimed at in the teaching of history, an eminent English scholar sums up in this way:

First—Of course to educate our children.

Second—to give them some idea, so far as possible, of their duties as citizens, to make them, in Milton's words, "steadfast pillars of the state."

Third—to make them love their country, as the Athenians loved "the city of the violet crown."

To educate them—that is to develop in them the capacity of analysis, comparison and inference. To give them an idea of their duties as citizens—of their own country and of the world. To love their country—wisely and with discrimination. Toward the realization of these three purposes the year's course in English History makes a unique and not unimportant contribution.

The historical curriculum in the schools of most of our cities provides American History exclusively for the work of the first eight grades. By means of anecdote and story, the names of a few of the great heroes of other countries are made familiar, but more for some ethical and moral profit than

for their historical significance. The committee of eight, I understand, recommend the insertion, in the sixth grade, of the European conditions contemporary with the colonization of America—the creation of an European background in the pupil's mind—which, of course, does not mean the teaching of European history as such. This limitation to the one subject in the grades below the High School is no doubt necessary and wise. Those grades have so to deal with the children of the foreign born as to eliminate inherited ideals and create American ones—giving at the same time to our own children, while their minds are open to those first impressions which are so strong and lasting, necessary lessons of patriotism.

But as a result of such a course, the pupil enters the High School with a very limited and one-sided conception of history. He loves his own country, "pities all others and despises them." He has an idea of the duties of citizenship, and a blind faith in the superiority of all American institutions. This outlook may be permitted as a phase in the making of the youthful patriot, but it should certainly be greatly modified before the High School graduate finds himself in the world. The enormous complacency and self-conceit likely to be produced by such exclusive study of one's own country is certainly not the ideal of our educators.

Toward the correction of this "bumptious Americanism," as some one called it, and the substitution for it of an intelligent and reasoned patriotic sentiment, the courses of the 9th and 10th grades accomplish something. Greece and Rome, while their chronicles are of great cultural and educational value, are too remote in time and experience to disturb this serene confidence in American institutions or to shake the belief in the United States as a sort of Ultima Thule toward which all historical highways lead. Nor does the course in Mediaeval and Modern History supply just the corrective needed. A survey, in ten months, of the whole field of history from 476 A. D. to the Revolutionary period is immensely valuable in giving the pupil an idea of the succession of great historical movements and the characteristics those movements assume in different countries. It also supplies him with facts from which to do his historical reasoning, but it cannot permit a study of any one country sufficiently detailed to make possible an intelligent comparison with our own. Few teachers, moreover, find it possible to carry the course through the 19th century. Modern governments and the development of constitutions are not studied and the pupil continues to regard the star-spangled banner as the *only* emblem of freedom.

The year devoted to English history is then the pupil's one opportunity to study foreign institutions which yet bear sufficient resemblance to his own to come within his sphere of understanding, to note the general trend of the 19th century, with its great achievements toward democracy and toleration and to observe present day conditions and other methods of dealing with them.

He watches a nation developing slowly, with many periods of seeming inactivity and even retrogression, those ideals of freedom in government and religion, of equity, national and individual, that he had considered peculiarly American. He observes the working out of institutions to achieve, so far as possible, these national ideals—the trial of one method after another, each abandoned quietly without tumult or disorder, in favor of more effective means—“precedent widening grandly out to precedent”—until the present government forces his respectful consideration. To the infinite betterment of his mental attitude he is ready to accord sympathetic attention to an administrative system, a financial method, a commercial policy and municipal management, all different from his own, but each well adapted to its own purpose and contributing effectively to the establishment of the same kind of good government which our similar institutions are designed to accomplish.

And he sees England's sons carrying these national ideals across many seas to many different lands handing them on to children nations which strive in their turn to preserve and realize them, each in its own way, through methods modified by the necessities of the peculiar conditions. Though his is the heritage of the oldest son, he realizes that the younger brothers must be reckoned with now and increasingly hereafter—that England did not bestow upon him alone all that she had of good—and that, by giving, and sometimes by losing, she herself has grown constantly greater and wiser.

The Colonization of America now takes its place as one fact in the development of a great empire, the inter-colonial wars are phases of a larger struggle fought in many fields, the American Revolution a necessary outcome of a mistaken colonial policy. Events fall into correct focus, the pupil begins to get historical perspective.

If my premises are correct, if the pupil does need a comparatively intensive study of some other country than his own to correct his historical vision, if he should have knowledge of other institutions to serve as a scale whereby to measure our own, then certainly over-emphasis and over-development of the points of contact between English and American History would be to destroy much of the general educational value of the course in English History and to rob it of its special function in the historical curriculum.

The teacher is constantly tempted to such over-emphasis—to devote—for example—to the Puritan Migration, or the War of 1812, or to England's attitude toward our Civil War an amount of time and energy far out of proportion to the importance of these events in England's own development. The pupil already knows that the Puritans came to America—in fact he thinks that they *all* came and stayed and gave to the United States a monopoly of certain desirable qualities possessed by them alone. With this comprehensive conception he enters the eleventh grade, and this is the conception he is likely to carry away from it if his teacher follows the colonization of

the rockbound Massachusetts coast with more enthusiasm than she can muster for the struggles of those who at the same time were working out their salvation at home, impressing upon the national character the same ideas of right living, religion, and good government which their kinsmen carried across the sea.

To treat England's great military operations of the early 19th century as a mere prologue to the War of 1812 is shameful disregard of historical values, yet a teacher will sometimes accomplish this by painstakingly leading her class through a minute description of its campaigns, while Trafalgar and the Peninsular Wars are hastily summarized and Wellesley's victories in India not even mentioned.

In the same way the settlement of the Alabama claims by the treaty of Washington is allowed to over-shadow the infinitely more important reform measures of the ministry which completed it. The Disestablishment of the Irish Church, the Elementary Education Bill, the Trades Unions Act, are surely of more importance than is the payment of fifteen millions to the United States, or even the negotiations which preceded it.

The attempt to insert American Colonial History into this course is to my mind open to the same criticism. I myself was guilty of such a misdemeanor three or four years ago when I devoted four or five weeks to a more or less detailed study of the settlement of the Atlantic seaboard. I found then that I was crippling my own course to nobody's advantage. I was forced by lack of time to omit entirely what I consider a most valuable part of my work, viz., special studies of the cabinet system, the municipal reform, and the industrial revolution, and to hasten in a most unsatisfactory way over other important periods.

Then, too, the pupil came back to England with a certain loss of sympathy, a false estimate of the importance of England's colonies to her at that time, and a biased view of her colonial policy. During the Stuart period colonies and colonists really meant little to England,—it seems then a sad perversion of truth to give them this disproportionate attention. Two weeks for the Puritan Revolution, a month for the colonies is a division of time not authorized by their relative importance to the England of that time.

Is it not, moreover, unfair to emphasize so strongly one phase only of England's Colonial policy by studying in detail the one instance where her early mistakes were fatal. Canada, India, Australia rather than the thirteen American colonies, should be considered typical of England's empire building, since in these instances a liberal and enlightened treatment succeeded the early policy of repression and won hearty loyalty and support. Such distortion of facts is not historical, not educational and hardly honest.

While deprecating subordination to it, I would urge continual reference to the facts of American History by way of illustration and comparison. To explain the unfamiliar by reference to what is known and familiar is certainly a sane principle. While my experience does not justify me in saying

that the facts of American history and institutions are really known by the average pupil of the 11th grade, still there is in his mind a body of hazy impressions to which one may appeal with the certainty of at least arousing interest and the possibility of gaining intelligent response. If he acquires the habit of finding analogies and making comparisons, he will begin to prefer definite to indefinite impressions and to form valuable habits of accuracy and thoroughness. The balancing power of his mind is strengthened and he gains valuable experience in the organizing and relating of facts.

Taught in this way as an independent course, English history makes strong appeal to the faculty of comparison and judgment bringing about a clearness of perception and a mental enlargement which entitles it to high rank as an educative influence. The pupil's conception of his civic life gains in depth and intensity from the realization of his noble English heritage. A sense of the continuity of history grows upon him, he sees his own country in its relations, not in isolation.

Dimly he begins to comprehend that there is outside his commonwealth a world of which he may be citizen and that his value to his own country will be greater for knowing its wider laws.

English history is a mighty drama whose action moves steadily from climax to climax. A drama of struggles noble on the whole and nobly fought.

It is petty to try to make of it a prologue or a background. If it is to be taught at all, let it be honestly done, for its own sake—not as American history in disguise.

HOW FAR MAY LEGAL AND CONSTITUTIONAL PROBLEMS BE EMPHASIZED IN HISTORY TEACHING?

SUPT. LEW ALLEN CHASE, COLOMA.

The purpose of this paper was to indicate a method by which the work in Constitutional History is made easier for teacher and pupil. The study of the history of institutions seems to afford such a method. As in Science, so in History it is necessary to segregate some small portion of the subject for purposes of study. The line of segregation may well be an institution. The sum of the history of many institutions approaches the history of the nation as a whole. In studying the history of an institution, only facts useful for the immediate purpose are employed; all others are excluded. We have here a principle of cohesion very useful to pupil and teacher. The institutional treatment of History organizes the material. Such organization is necessary; it is impossible to impart an incoherent mass of historical information. Definiteness is secured in institutional History. This simplifies

ing process is good for pupils of any grade, as proven by actual trial. But in order to make the work in institutional, and so in constitutional History, a success, we must require that the teacher be much interested in his subject, well read, acquainted with the fundamentals of political science, jurisprudence, sociology, finance, etc.; and a good thinker. The History of governments and institutions must be familiar. Clarity of exposition must be had; the language of the text must be brought to the pupil's level; trivial facts must be excluded. Text writers and teachers must concentrate on fundamentals—generally the history of some institution: the teacher can best do this and that on the review. The review in History has a new and important function,—a new treatment of old material. On the review the teacher determines what conditions in the history of a people are fundamental, and then isolates in the text all information bearing on that history, and combines it in such a way as to show institutional growth and decay. Series of questions with page references to the text may be prepared for the review, which, if the pupils follow closely, will greatly simplify for them the work in History; for these questions present a definite task, not beyond the pupil's power; and in employing only such information as bears on the answer of the question (which is usually on the history of an institution), the pupil is saved from a bewildering and over-whelming mass of detail. Samples of questions used are: "Show how the government of Athens changed from a monarchy, through a democracy, to an oligarchy." "Discuss the history of the Roman Senate." "Show by what process the Roman Empire was finally and definitely established." "Discuss the history of the Christian church." "Show how the rule of one man was substituted for the nominal rule of the Roman citizens." "Show how the King's Council in England changed into a Parliament." "Discuss the organization of industry in the United States." Information contained in the text bearing on such problems as these, and many others, is isolated, collected and combined so as to show institutional development. All information not helping to this end is rigorously excluded. The pupil readily works out such definite problems, which, as experience proves, are not beyond his grasp. And in doing this work on the review, collateral reading may be employed, better than elsewhere, to fill in deficiencies in the text and to present the history of a given institution with such fulness of information as to make a large and definite impression on his mind.

THE LEGAL BASIS OF AMERICAN HISTORY.

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There are few tasks more difficult than that of classifying the acts of men according as they are done because of the existence of law, or in conformity with some unwritten but authoritative custom. Even men of intelligence and learning, men trained in the law and its limitations, are often confused in this matter; much more are men of little knowledge at loss. Not long since, an old negro in one of the southern states, where the franchise is exercised by those only who know and understand our constitution, was applying for registration as a voter. The examining officer asked him, "Well, Uncle Ned, what part of the constitution is derived from Magna Charta?" The old negro scratched his head and a look of despair came into his face. "I don't know, Boss," he responded, "unless it's the part that says a nigger can't vote." "Right. Register him," was the immediate answer of the judge. There are many of our customs which have no sanction whatever in the written law, but which are observed by all without hesitation. On the other hand, it was only a few weeks ago that Judge Taft and the eminent constitutional lawyer who has since become his Secretary of State, completely forgot that the constitution explicitly forbids members of Congress to accept, during the time for which they have been elected, any office whose emoluments have been increased during the same time. When common men make the constitution include the whole unwritten law, and jurists forget its express mandates, there is much excuse for teachers who are a little uncertain as to the bearing of law upon history.

The student of constitutional history in America can scarcely escape the conviction that either the constitution has meant widely different things at different periods, or that the public cannot comprehend more than one of its passages at a time. During the first forty years of its life nearly the whole concern of the legal profession and the politicians was centered upon the small group of clauses which define the relation of the central machine to the local governments. The vexed question of state sovereignty was in the air. That an immutable law existed to cover the subject was frequently denied, and state after state, as they had grievances against the government, joined the long list of malcontents in protesting that a law obnoxious to a single state could not be enforced. South Carolina has long held an unenviable prominence among the deniers of federal authority because of the vigor of Andrew Jackson and his defiant attitude which was summed up in his apocryphal remark that if anyone resisted the operation of the law, he would "hang the first South Carolinian he could catch, to the first tree he could reach." But today we know that Jackson's zeal for the Union was fed by his hatred for John C. Calhoun; and he may have hoped that the latter might be the first South Carolinian to be caught. South

Carolina was little more obstinate than many other states, north and south; she was merely better advertised. Jackson had no exceptional desire to enforce federal law against the states, and where the policy of other nullifying states happened to coincide with his own whim he let them go unchecked.

Since the civil war, and more especially in the past twenty years, there have been only occasional outcroppings of the relation of the state to the United States. Instead, the center of interest has been in the problem whether the written constitution, framed more than a century ago, contains warrant sufficient to enable the federal government to place under national control the national economic organizations which have appeared out of the developments in transportation and communication. It is reasonably certain that these national organizations must be controlled by some national authority; with a proper regard for tradition the task of finding the authority has been left to the courts, in full conviction that the written document was wisely framed, and is sufficiently elastic to justify the interpretation.

It is impossible to understand the meaning of many of our political struggles without an exact knowledge of the legal relations underlying them. Again and again it has happened that topics of interest, while new, have been treated without partisanship; as when Calhoun supported, in his early years, a tariff and internal improvements. After long periods of indifference the country has often discovered a need to settle the constitutional relations of the problems, and party politicians have had to reshape themselves to meet the need. Most of the men who in the twenties of the last century fought the policies of internal improvement had formerly supported individual measures of the sort without realizing whether such acts would lead them. And later they had turned over, almost without exception, and supported the legal view which best suited the needs of their localities. Rarely have there been statesmen loyal enough or sturdy enough to solve problems uninfluenced by considerations of local interest.

The student who shall in another generation come to study our problems of today may well be worried over the apparent inconsistency of our national government. He may see economic institutions of national scope working their whims almost unchecked, and may learn of the desire equally national to regulate them. Yet he will probably ask, "Why didn't they do it?" It will take careful examination and analysis for him to learn the truth, which does not appear in the contemporary discussions, that the United States maintained a central government to which it had not expressly given powers fully adequate to the task before it. The intelligent European observer may see the same thing even now. Abroad many of our problems are unknown because there is no check upon the central authority, which is thus left free to adapt itself to new conditions as they arise. It may be that benefits more than compensating for the things that are denied flow from our American arrangement; yet it remains true that the constitution was framed in a day of economic localism, whereas it has now to be applied in an era of economic consolidation, integration, and nationalization. The

student of our period must convict the United States of incapacity or insanity unless he be well grounded in the nature and theory of our constitutional limitations.

Contrariwise, there has been at least one period in American history in which a knowledge of and adherence to these constitutional principles tends to disqualify the historian. The crisis of the civil war found no machinery prepared to meet the problem of disunion. The legal doctrine of union was pretty well established, but in the event of armed rebellion there was no advice in the formal law. Yet Congress showed here a willingness to go its own gait regardless of the constitution. Despite the protestations of constitutionality made by the republican leaders, many of the reconstruction measures were clearly unconstitutional and several of them were actually declared so by the Supreme Court in later years. Yet they were enforced. It came out in the struggle that when the United States is sufficiently interested and impassioned, all the restrictive measures of the constitution cease to restrict, and the acts of Congress are to be limited only by its inclinations. From 1866 to 1869 more than two-thirds in both houses were opposed to the President and it became possible to pass anything over his veto. One of the constitutional checks was thus silenced. The courts remained, but when a test case, *in re McArdle*, was appealed from the Circuit Court and it was rumored that the Supreme Court was likely to decide it adversely to Congress, this body rose transcendent to the danger. Under its admitted power to regulate the appellate jurisdiction of the Supreme Court it passed a law denying to the court jurisdiction over cases of this class, including cases then on the docket. Since the Circuit Court opinion sustained the law, Congress thus prevented a reversal of its act. The student must bear in mind that in some matters the United States permits the written constitution to rule; but when passion is aroused in a dominant majority, with two-thirds of Congress behind it, Congress may assume a dictatorship which goes beyond all law.

Failure to understand legal foundations prevented the United States from realizing the true meaning of the American Revolution for three generations, and there are many even today who speak and think loosely on the subject. The careful historian who should now assert that the colonies were justified in their rebellion because of the unconstitutionality of British acts would be hooted out of court. The colonies themselves believed that the obnoxious acts of Parliament were unconstitutional, but passion such as theirs is fuller of heat for burning down than of light for the illuminating of abstruse points of law. It is clear today that the British constitution gave full justification to the American statutes,—however impolitic they may have been.

At the same time, while showing how little the revolutionary fathers understood the causes which justified their acts, legal research has brought forth a valid explanation of the inevitable split. Self-government in America, and the frontier environment, had developed a political life different

from that of Great Britain, though using the same terminology. Representation had come to mean one thing in America while it retained a different meaning in England; yet England and America each believed honestly enough that its definition was universal, and that the other was treacherously trying to evade it. Far from being oppressive and tyrannical, the English colonial system in 1775 was the most liberal in the world. None of the colonies of continental Europe had the privileges and independence of the English colonies. Yet this very independence which England permitted worked her undoing because of its tendency to educate America to demand more and more. An unsound colonial system, real misapprehension, and a family stubbornness on both sides of the Atlantic, account for the American Revolution and have replaced the tyranny and unconstitutionality theories of our fathers and grandfathers.

The case and fame of Daniel Webster well illustrate the desirability of founding historic teaching upon legal knowledge. The glowing peroration of his reply to Hayne has placed him among the great leaders of American thought. The supremacy of the Union he placed upon that clause of the constitution which makes it the supreme law of the land. "The people so will it," he insisted. "No state law is to be valid which comes in conflict with the constitution or any law of the United States passed in pursuance of it." And the interpretation of this conflict, he maintained, had been left not to state legislatures but to the judicial power of the United States.

Says Lodge, the biographer of Webster, "His fame grew and extended in the years which followed, he won ample distinction in other fields, he made many other splendid speeches, but he never went beyond the reply which he made to the Senator from South Carolina." Channing adds, "Webster and Hayne between them had stated the two ideas of the Constitution around which the history of the United States was to center for the next thirty years." McLaughlin declares, "He pointed out that nullification must be only interstate anarchy." Macdonald thinks, "No one was so well fitted for the task as Webster. He was the foremost New England statesman, the ablest American constitutional lawyer, and incomparably the greatest American orator that the country had yet produced; and he now, with little direct preparation, summoned all his magnificent powers to expound, once for all, the nature of the Union he loved." It would be easy to add to these citations dozens of others, all magnifying the importance of the debate and the service of Webster, and all of them, equally, ignoring the fact that an eminent Virginia jurist had stated every one of these arguments, and quite as well, nearly fifteen years before.

John Marshall it was, and not Daniel Webster, who deserved the credit of formulating a positive theory of the Union. At the beginning, when even Washington was not sanguine about the success of the new plan, everyone believed that if the new government should not work well it might be abandoned, and most of the original states expressed that belief. But

John Marshall, who was the most valuable heritage of the Adams administration, sat in the chair of the chief justice for thirty-six years. It was he who saw the full meaning of the words that "this constitution shall be the supreme law of the land." For many years he handed down his decisions which said in exact, uncontrovertible legal language those things which Webster later translated into popular phrase. Indeed it is probable that Webster himself was the pupil of the chief justice before whose bench he was an active practitioner for many years. The bench and bar already knew the meaning of the constitution when Webster answered Hayne.

It is not the fault of the teacher in the secondary school that the legal foundations of American history are not well taught. There is much that needs teaching, but it has rarely happened that the writer of historical texts has had enough training in the law, or the writer of legal texts enough in history, for the results to be good. I know of no book which adequately connects the decisions of the courts with the ebb and flow of public opinion. Commonly enough unpopular decisions are described in connection with the outbursts of unenlightened criticism of them, but there is a process of opinion-making in America which yet needs its historian. From the courts, and notably the Supreme Court, come the written decisions upon the law. From year to year these decisions enter into and become part of the ordinary opinions of the bench and bar. Later, and more slowly they filter through the profession to influence politicians and public, and become a part of our intellectual stock in trade. Only too often, as in Webster's case, the popularizer gets the credit which the inventor ought to have.

The secondary teacher can rarely get far beyond an intelligent use of the text in his hand. He is a busy person with a multitude of details clamoring for constant attention, and often has a range of subjects to handle that would bankrupt the universal intellectual geniuses of the renaissance. It is the business of the university to give him an honest text; his school board and superintendent must give him time to know his subject, and restrict him to his single subject; he must himself remember that history, most of all subjects, can be taught best by him who has read most, seen most, and thought most. As the English essayist has pointed out, the historian is working with the problems "which have baffled statesmen and thinkers throughout the ages, and the mental equipment required for the adequate discharge of that function is seldom found, and is only acquired at the cost of infinite patience and toil."

CONSTITUTIONAL HISTORY IN THE HIGH SCHOOL.

MISS ELSIE COOPER, CHARLOTTE.

The question of how far constitutional and legal questions should be carried into high school history is one which can be answered only by considering what is the essential part of a nation's life. Greece gave her culture to the world. It is then, her literature, art, and philosophy which should be made to stand out clearly in the mind of the student.

Rome was the law-making nation of the ancient world. We might leave out all her other achievements and still have Rome; but neglect her constitution and her laws, and Roman history is meaningless. The whole struggle between patricians and plebeians must be made real and vivid. Teach as much of the Roman constitution as is necessary to form a background for the Catilinarian orations and the speech on Pompey's commission.

English history is an end in itself and also a preparation for a deeper understanding of American history and civics in the senior year. Of the political and constitutional development previous to the coming of the Normans only so much need be taught as survives the Conquest. With the accession of Henry II, in 1154 began the wonderful legal and constitutional development which was to continue through the succeeding century. The legal reforms and the judicial system of Henry II. cannot be taught with too great care; but the teacher must be on guard against using conflicting authorities in the high school and in the most knotty problems the teacher should do the extra reading herself instead of assigning it to the class.

The Magna Charta should be emphasized as a land-mark in constitutional development. It is not necessary or desirable to go deeply into the details of the separate provisions. De Montfort's Parliament and the Model Parliament should each be carefully considered, and by that time constitutional advancement and political progress ought to be more than mere words to every member of the class. The Petition of Rights in 1628 was an emphatic reassertion of the principles established in the 13th century, and the Bill of Rights in 1689 was a worthy superstructure to the foundation laid five centuries before.

It is a revelation to a class to study the American Revolution from an English point of view. The period gives an opportunity for discussion of the principle of representation and prepares the way for a thorough study of the reform bills of 1832, 1867, and 1884.

The 19th century is the only one worthy to be placed beside the 13th in constitutional development, and in the latter period we have the advantage of the modern political literature which is neither too difficult nor too dry for the use of the class at first hand. British politics are fascinating and

elections, cabinet changes, and other topics may be studied through current periodicals.

The senior work in United States history should be more than a review of facts learned in the grades. Indeed the student must now be held accountable not only for facts but for the judgment with which he weighs them and which he brings to bear upon the questions of the day. Can he read the best newspapers intelligently? Is he capable of forming an opinion on a political question and defending it by a fair judgment?

Constitutional history is unquestionably hard, and it entails an unlimited amount of work on the teacher; but it pays. Aside from the direct value of the knowledge acquired, it demands clear thinking and accuracy in the use of words, and is the best preparation for citizenship found in our high school today.

BIOLOGICAL CONFERENCE

THE INFLUENCE OF THE DARWINIAN DOCTRINES UPON THE DEVELOPMENT OF PSYCHOLOGY.

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The widest generalization of the human mind is the doctrine of Evolution. Everything from a monad to man falls within its reach. Sand grains and star clusters furnish evidence of its truth. Nothing in the universe escapes its all comprehending boundaries.

Psychology was studied before Spencer wrote or Darwin dreamed. From Aristotle to Locke and Hume, thoughtful men had reflected upon the activities of their own minds. It must be remembered that Spencer was the author of the doctrine of Evolution, while Darwin furnished the evidence that rendered its truth demonstrable. Spencer wrote his greatest book, the *Principles of Psychology*, and unquestionably the greatest book in the history of the subject, in 1855, four years before the publication of the "Origin of Species." Darwin himself presented to psychology his masterly volume upon the "Expression of the Emotions," still our greatest book upon that phase of the subject. Romanes contributed to its advancement, while to Huxley, the science is also a debtor.

With such an impetus from the great Prophets and Lawgivers of Evolution, it was to be expected that, when Evolution had become an article of faith with all thinking men, Psychology would be one of the first branches of science to profit by its supremacy. Such has not been the case. Any discussion of the topic announced at the beginning of this paper must take on

something of the form of an explanation why psychology has profited so little by the predominance of evolutionary thought. Biology and subjects with biological affiliations were the focus of the Darwinian illumination, but psychology is almost the last department of human knowledge to feel its full effect. Botany and zoology have been transformed by it. Chemistry and physics have felt its beneficent influence. New departments of knowledge have been born into the hierarchy of science through its quickening power. But psychology has, until recently, placidly refused to respond to its magical touch.

The reasons for this delay are not far to seek. A modification of psychological conceptions touches more intimately than does any other branch of knowledge, the religious faith and the personal pride of men. Even Lyell, to whom Darwin attributed a greater influence upon his own thought and labors than to any other person, could not go with Darwin into his speculations concerning the origin of man. Wallace, the co-discoverer of Darwinism, refused to believe in the efficacy of Evolution to account for man's spiritual nature. And now, while nearly every intelligent person acknowledges the evolutionary and natural origin of man, even to his psychical endowment, the flag still flies over the solitary stronghold that defends the supernatural character and destiny of the human personality.

Hence it is that any evolutionary explanation of man's phycical nature which seems to weaken the bulwarks of religious dogma is fought with bitterness and acrimonious zeal. The armor piercing projectile of "materialism" is hurled against it. Intuitional evidence is asserted to be of more weight than scientific demonstration, and personal prejudice produces unshakable conviction.

Besides the fear than an evolutionary psychology will demolish the doctrine of a supernatural soul, psychology has until now failed to escape from the domination of metaphysical philosophers. It is still treated as a department of philosophy rather than a natural science. Metaphysicians are practically untouched by an evolutionary philosophy. The metaphysical gods that are set up and worshiped antedate the evolutionary era, and the founder of evolution himself is drummed out of the philosophical camp. As a result, we find psychology scarcely as yet escaped from the philosophical verbiage which for centuries kept it in a condition perilously near approximating asphyxia, for, in the words of Saleeby, "the principal bequest that metaphysicians have left to psychology is a heritage of concatenated words." The followers of Kant and Hegel and Plato have, up to the present, written the psychologies and dictated the officers of the psychological hierarchy. The disciples of Darwin and Spencer have, likewise up to the present, neither written the psychologies nor devoted themselves to the development of the subject; instead, as it has been promulgated by metaphysical philosophers, they have experienced a heartfelt contempt for its conclusions.

Instead of following the lead of Darwin and Spencer, and basing psychology upon the principle which is the essential element in Darwinism, that every mental characteristic is either now, or has been in the recent past, advantageous to the individual or to the species, psychologists generally have failed to see its application and have plodded along as if Darwin had never lived and laid out new laws for the biological kingdom. They have failed to see the significance of sleep as a self-preserving character; of pain as a beneficent advantage to the race and to the individual; of spontaneous attention as an essential means of adjustment; of the necessary classification of feelings into self-preserving, community-preserving and race-perpetuating, with their expression interpreted as either a useful action or an accidental circumstance. They have made of consciousness an ill-pervading condition of mental life, instead of an accidental concomitant, or an epiphenomenon, as Huxley called it.

Notwithstanding this delay in appropriating to itself the life-giving essence of evolution, psychology has experienced some of the transforming influence that has touched other sciences. Especially is this true in the latest years. It is now possible to say, as Mr. Buchner does in a recent number of the Psychological Bulletin, that "the past year's work is characterized by a number of contributions of widely divergent range, bringing the general hypothesis of Evolution closer to the problems of psychology and taking the vantage points of the science over into the present needs of the theory." There is evidence that henceforward, evolutionary conceptions will exercise greater influence in psychology than they have done in the past. It is well, even now, to gather up the evolutionary ideas that have found a place in psychology as a view point for a prospect into the future.

Evolutionary conceptions have taught us to interpret mental habits, tastes, preferences and feelings, as well as emotional expression, by means of the ancestral life that human beings and pre-human progenitors have lived. Instinctive fears, ideas that have been called intuitive, successive appearances of well-marked stages in mental life that have their counterparts in physical growth, each with its own series of tastes, activities and aspirations, can be interpreted only in terms that evolution has given us.

The human being of today has been molded by the stress and strain of half a million years of ancestry, and no longer appeals to us as a creature—in the terms of pre-evolutionary psychology—fresh from the hands of God. Instead of being a new creation, the little child is the oldest of all men, combining in his potencies the largest amount of organized experience. Such a conception was utterly impossible to a pre-evolutionary psychologist, and even today, many psychologists tarred with the metaphysical stick, although honestly believing themselves evolutionists, are unable to attain it.

Related to the conception just mentioned, is the new attitude toward moral and mental delinquents. No longer do we regard criminals as children of the devil, and an idiot as one afflicted of God, but we see in them

the result of an atavistic tendency which leads man back into the seas and swamps of a paleo-psychic age. Children are mentally and morally irresponsible, but this expression is itself an archaism from the metaphysical psychology of the ante-diluvian period. Irresponsibility is as natural and as inevitable to children as responsibility is to a grown-up. Children need to grow, and it is the duty of a philosopher and a philanthropist to furnish them suitable conditions for growth. Here we find in evolutionary psychology a justification for education—universal, thorough, all-pervading education—that it was impossible to discover in the psychology of the past. It was impossible to conceive of a science of education in terms of the old psychology. For education, the new psychology derived from Evolution, is full of promise, and hope, of fulfillment. A science of Education is possible since Darwin wrote.

Employing the Darwinian principle of Natural Selection, we have in evolutionary psychology an explanation of the mental differences between men and women. Every mental characteristic is now or has been in the recent past, an advantage to the individual, to the community, or to the race which exhibits it. As a result, we shall find that the mental processes of men and women differ in exactly the degree that the physical and sociological functions differed in the development of the human race. No possibility of attaining such a conception presented itself to the metaphysical psychologist who saw in the human body only the instrument of a metaphysical entity which he called mind.

Evolution has compelled psychology to become genetic and functional instead of descriptive and (most inappropriate of all adjectives) rational. There is scarcely a more irrational thing known than rational psychology. Psychological facts find their explanation in antecedent physiological conditions. Until this principle has been adopted as the foundation for all psychological research, no progress is possible. Whether we regard the psychical as the product and the result of the physical, as a function of the nervous organism, or whether with Wundt we consider the doctrine of psycho-physical parallelism as an all-sufficient statement of the relation existing between mind and body, progress in psychology is possible only by assuming that mind and body constitute an inseparable unity, subject to the same evolutionary laws, and originating in the same antecedent condition. The real nature of the mind, the thing in itself, does not enter into any scientific conception of psychology, and may very properly be left out of consideration until more is known about the real nature of mental processes and their relation to each other.

Evolution has produced such an effect upon psychology that at present, child psychology—mental ontogeny—constitutes its most promising department. This field, totally neglected by all psychologists from the time of Aristotle until Darwin, is now seen to be the one in which can best be studied the phenomena that most urgently demand explanation. The changes of personality; the sudden growth of instincts; the operations of

feelings and their function in mental life, all these when studied in children by the aid of evolutionary principles, have thrown such a flood of light upon the nature of mental processes as to render obsolete and useless all works upon psychology that are based upon the conceptions of a pre-evolutionary age. It is a field that would never have been cultivated under the paralyzing influence of the doctrine that mind is a metaphysical entity using the body merely as an instrument, but dependent upon it only as a means of expression and for producing motion in material things.

Evolution has shown us, also, the kinship existing between men and other animals in the psychological world. Unfortunately, psychologists have generally not been acquainted with animal life and structures sufficiently to study the subject with advantage, and zoologists have been too busy, or too little informed about psychological processes to make such a study profitable. Hence we find in this field of mental phylogeny the most divergent and contradictory opinions maintained in places where we have the right to expect the most profitable studies to be made, and the greatest unity of method and conclusion to prevail. The doctrine of evolution, here, must be our guide out of the labyrinth.

From this time forward it seems probable that psychologists will recognize that natural selection, in its application to human development, at least, has been a selection by means of characteristics that belong, not to the physical alone, nor to the psychical, but to the total complex of the psycho-physical organism. There have been not two movements in evolution, a physical and a psychical, but the two series have been carried forward together, constituting a single genetic movement. This conception was impossible so long as it was believed that the mind and the body were two different entities instead of being a single complex. It seems evident, now, that the body has developed in consequence of the selection by psychical processes of variations which without psychical selection would have been destroyed or overlooked. The law of functional selection is necessary for any satisfactory understanding of the method by which Darwinism is applied to the human being at least, and functional selection depends upon psychical processes.

Equally necessary is it to take into account the variations of the body in any attempt to explain the origin and real significance of mental processes that have been the subject of study from the time of Aristotle downward. It would have been impossible for the mind to develop by the selection of utilities for which the body presented no variations. Mind in man has become what it is in consequence of the variations that the body has exhibited.

It seems that the dynamogenetic law has been thoroughly established in psychology. But the law of dynamogenesis itself is an application of the law of natural selection. Every conscious voluntary act is an example of the Darwinian principle of natural selection, and no act of consciousness

can produce a voluntary act unless the variation that has been psychically selected has been previously established.

Without question, the prevailing psychology of today is German psychology. Until recently, psychology was essentially an English science; but Fechner, Weber and Wundt have directed it into such a path that it has become essentially German. The German method is characterized by a slow and laborious accumulation of data, and is deficient in the very element that the doctrine of evolution supplies. The German method has freed psychology completely from the hypothesis of a metaphysical entity called mind, and has enabled it to reach the point where it has been called in derision, a psychology without a soul. This is the condition that every subject of knowledge must reach before it can be called a science. It must be a science of phenomena, and not a science of ultimate causes. German psychology has regarded physiological processes as means of studying the psychical, and has introduced experiment as a primary method of psychological research. The demonstration of Weber's law has rendered forever impossible the continuance of the former conception of mind as a postulate for psychical study.

But the German psychology is deficient in a great synthesizing principle that shall guide discovery and summate all progress. All psychical facts are valuable, but not all are of equal importance. Sometimes, also, I fear that we are too busy in trying to find out what the Germans are doing to accomplish all that we ought to do ourselves.

The greatest need in psychology today is the formulation of a synthesizing principle, based upon the doctrine of evolution, and including the facts discovered by German methods, which shall enter every field of psychical activity and shall bring all departments of research under its dominion. We need for psychology a restatement of evolution in psychological terms; and I predict that it will not be many years before a new Darwin will arise in psychology and that this Schoolmasters' Club will listen to a continuation of this paper in newer terms than it is possible now to employ.

THE EFFECT OF THE DARWINIAN DOCTRINES ON EDUCATION.

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The Educational exhibit at the World's Fair at St. Louis surprised educators because it brought together the evidences of the fact of the very rapid transition in Education during the preceding 25 years. Probably education has changed more rapidly within the last 5 years than it had during any of the five years between the Exposition at Philadelphia and

that at St. Louis. A study of the exhibit revealed the fact that the forces which were at work in the educational world were largely biological. Education has approached life and the problems of life, and has tried to preserve, protect and enhance life. But we must distinguish the effect of Darwinian doctrines in education from certain influences which have been at work for 400 years. The changes in education for the 4th quarter of the last century have been due largely to influences that reach far back in the history of education. In this connection we must keep in mind also the fact that ideas permeate the educational world very slowly. Rarely within their generation do the thoughts and ideas of advanced educators affect educational practice.

One of the most rapid changes that has ever followed the teachings of an educator is that which was brought about by Herbart, who taught that all learning was apperceiving, and hence a teacher could not teach wisely until she knew the apperceptive center of her children. This naturally led to the study of the contents of childrens' minds and precipitated our child-study movement. But Herbart died in 1841, while the crest of the wave of Herbartianism reached Denver and the Rocky Mountains in 1895, about 50 years after he enunciated his theory.

Beginning with Rabelais and Luther, 400 years ago, there has gradually developed the idea that the study of Nature should have a place in the schools. This was greatly increased by Bacon, Locke, Comenius and others, until Nature and the natural method was the cry of all advanced educators. But Rousseau, about 160 years ago, was the first to say that the nature of the child should be taken as the basis of education. Pestalozzi and Froebel gave practical application to this doctrine, and it has become the fundamental principle of all primary and secondary education today.

Froebel's idea that the child passed through various stages of growth from the babe, the infant and the young child, through to youth and manhood, and that the child at every stage should be all that that stage calls for, was the greatest educational idea in the world, perhaps, at the time he expressed it, and from one point of view is good evolution. It has brought our kindergarten and the various stages in education up through the high school and university, and has given much of the modern aspect to educational thought and procedure, but there is very little of the modern idea of evolution in it.

Still, we must give to these educational reformers for 400 years all that belongs to them, and that is a large part of the credit for the present condition of the educational world. Our ideas of manual training, the beginnings of the teaching of Natural History, followed by Botany, Geology and even the sciences in general, are not due to Darwinian doctrine at all, but to the educators who lived and died long before he developed his great theory. Many of these sciences received a great impulse from the new point of view.

Spencer has had a great influence on the development of education for the past 25 years. He was writing his work on Education between the years 1850 and 1860 and published it just before Darwin published the "Origin of Species." Just in the midst of that period, Spencer also wrote the "First Principles of Psychology" from the standpoint of evolution as he knew it. His friends claim that his work on Education was the first exposition of the theory of evolution applied to education that had been given to the world. But Spencer, while believing in a general theory of evolution, just missed the point of application of evolution as Darwin saw it to the theory of the development and education of the child.

The time since the appearance of the "Origin of Species," the semi-centennial of which we are celebrating today, is too short for us to expect much in the way of results in the practical field of education. Only within the last 20 years have the leading educators shown in their teaching the influence of Darwin, and only within the last 5 or 10 years has there become any widespread prevalence of the Darwinian theories in regard to the rearing and education of children.

The child-study movement, so-called, is a direct outgrowth of the theory of evolution as Darwin presented it. Without this theory, child-study has no meaning whatever, and it is inconceivable to me that it ever could have developed without that theory. Darwinism gives us the genetic point of view. Today child-study is rapidly becoming the foundation for the treatment of children from their birth to full maturity and is even furnishing a scientific basis for the development of conditions in the parents and in the home both before and after the birth of the child, in order to give the child the best possible opportunities for growth and development.

Child-study looks at the child both in relation to its past history *and its possible future*. It sees, in harmony with Rabelais, Rousseau, Froebel and Spencer, that the child, like everything else, not only has a natural way of development and that education according to nature will be wisest, but, in the light of Darwinism, it sees the almost illimitable possibilities of the evolution of the child's brain and mind and life.

Science has given us the statement that there are five billion nerve cells in the central nervous system. Child-study sees that the possibilities of combinations of those brain cells is practically infinite, and that man, at his best estate today, is only a partially developed being; and that he is in the process of evolution perhaps more rapid today than ever before.

The old theories and the former educators all thought of the child in the present tense; they educated that which they had at hand. Education took on the form, even with Spencer, of training that which existed, without evidently a glimmer of the modern idea of the possibilities of the child; while today education is primarily a means of growth and development of the child, with comparatively little thought of training the present capacity of the child. The good educator of today constantly thinks of what this

child shall be; and turns all his efforts into that education and that form of stimulus which will cause new growth and larger possibilities.

That feature of education, in the sense in which I am thinking of it, was not even seen by Froebel when he said "the child should be at every stage all that that stage calls for."

Certain great principles of education today should be mentioned here as showing the working hypothesis upon which the good teacher bases her efforts. Those principles may be reduced to three, and may be stated as follows:

1. The child is different from the adult in kind as well as degree.
2. The child passes through in his development all those stages of growth which his ancestors passed through in their development from a one-celled organism; or, in terms of the scientist, the ontogeny recapitulates the phylogeny.
3. The child tends to stop growing on those levels where its ancestors tarried longest in their development; or the theory of arrested development.

On these three hypotheses the modern educator bases his psychology and pedagogy of education. These are all Darwinian in origin; or, more strictly, they have naturally evolved out of the Darwinian theory of the origin of species.

This paper perhaps need not undertake any illustration of these principles any farther than to make them clear to this audience. Still, a few statements in the nature of enlargement of the principles of the hypotheses may not be out of order.

In the first place, Darwin has taught us to see in the child not the small adult, but a curious little animal, whose organs are so unlike those of mature man that they will hardly be recognized as belonging to the genus *Homo*. We have learned that the child's body and the child's mind, if we include in the mind its instincts, are adjusted to a stage of evolution which takes us back a half million years, evidently, in history. The first Chapelle skull, which M. Boulé dates back 400,000 years, is much more modern than the form and instincts of the infant of today.

The infant's fears and tendencies give striking corroboration to Darwin's idea that man has evolved from an animal that would hardly be recognized as belonging to the human family. The mental characteristics of the child, too, are positively unlike those of the adult.

That the child recapitulates the history of the race, is too widely known to call for discussion. The danger that the child cease to grow at certain nodes of its development, is becoming well known. We see, for instance, that the child at 10 to 14 represents, in the words of Hall, "what was once for a very protracted and relatively stationary period, an age of maturity of the remote ancestors of our race, when the young of our species, who were probably pigmold, shifted for themselves, independent of parental

aid." This is known as the pre-adolescent period. The educator finds today that the child is generic under 13 years of age, or until the adolescent growth begins, and becomes specific only at the time of, or because of, the adolescent growth. This, in itself, explains the fact that children of primitive peoples learn as rapidly as children of cultured peoples up to the age of adolescence, and that it is only in adolescence that the child begins to inherit the acquired characteristics of its ancestors, and strips away from the child whose development, not having that ancestral push, ceases on that level where its ancestors rested in their development.

The aim of education ,then, from the Darwinian point of view, is to stimulate and push the child along through these successive stages of growth and over the places where the sledding is poor, onto the good road where it can keep up a development corresponding to that of the child whose ancestry has been so favored that the child has, within itself, the resources which enable it to cross those hard places with little or no outside stimulus.

Education from the Darwinian theory also gives us a future for man toward which all educators may bend their efforts. "Without a vision the people perish." Without an ideal, an aim, or a purpose in education, other than to enable the child to read and write and perform the ordinary duties of the simple business world, there would be nothing in education for men of ability. Intelligent leaders would soon disappear and our whole system would fall into a condition similar to that of the Chinese today.

Professor Tyler, of Amherst College, has done the world a great service in the publication of two books, "Growth and Education" and "Man in the Light of Evolution" in which he shows the possibilities of the development of man and gives us the outcome of the law of the survival of the fittest. I shall quote a paragraph from the latter book. "Man's greatest danger is that of incomplete development. The goal of evolution is a complete manhood, where the tough body, clear and cool mind, warm heart with its intense feelings, and iron will set on the highest ends are all combined in one royal life. This alone is that wholeness, haleness, health, holiness, salvation—call it what you will—which characterizes the true man of real and full power. Evolution points to a regenerated society composed of such men and women." This is more fully stated by Tyler in the same book in a discussion of man in his social environment, from which I quote: "The goal of human evolution seems to be a race of vigorous, healthy, whole, well-balanced men and women. Such men and women will be healthy physically with well-grown and fully developed strong and tough bodies. Good digestion will furnish abundant material for growth and repair and fuel for the use of our muscular and nervous systems. Clean and pure, well-oxygenated blood driven by a stout heart will stimulate instead of clogging the action of every organ. Tough muscles, adequately exercised, will insure health, power, and efficiency. A calm, steady, nervous system

will give economy of effort, grace and efficiency, and strength of action. Physical vigor will be accomplished by many most important virtues—hopefulness, cheerfulness, courage, confidence, endurance, steadfastness, and many others.

"The intellect will perceive clearly the real ends of life, will furnish the vision of ideals worthy of complete devotion, and will discern means adequate to the attainment of high ends. This clearer vision will stir deep feeling and emotion. Feeling and devotion will stimulate an iron will set on the reign of truth and right.

"The lives of these people will be completely dominated by convictions of right and duty born of ages of racial experience. They will be large, deep, beneficent, live 'rivers of water' or the 'shadow of a great rock,' as we have already seen."

To bring the discussion of this paper into more definite form, we have said that Darwinism has hardly as yet begun to affect education in general and only the best writers, thinkers and leaders in the educational school work. The science work in our schools is very largely due to influences that antedated Darwin's "Origin of Species," and only in modified forms of certain sciences do we get any of that in the school room work of today.

The educational reformers and the pre-Darwinian writers on education, however, saw nothing of man's possibilities as we see them today, and hence education was directed only to the training of that which they had in hand, and was not directed to the development of an ideal man whose possibility is clearly seen in the light of the theory of evolution.

Practically, these ideas are being worked out in the best schools today, as may be seen in the efforts which are put forth to stimulate pupils whose development is apparently arrested, because of lack of nutrition or other reasons, in some half civilized or savage stage. The treatment of delinquent children, the efforts that are made to develop the defective and imbecile children and the whole system of discipline of moral degenerates, have been changed. We have come to learn today that moral delinquency is closely associated usually, but not always, with physical degeneracy or with arrested development, and the problem of the Educator becomes the problem of the Biologist; namely, to stimulate the growth of this individual until he shall grow through and beyond the primitive stages, into the character and characteristics of complete development.

In short, the educator today must be a biologist and must realize that education is only a sub-department of biology based upon another department of biology, which is known as psychology, and particularly the psychology of the child.

"EFFECT OF THE DARWINIAN DOCTRINES ON RELIGION."

REV. C. S. PATTON, CONGREGATIONAL CHURCH, ANN ARBOR.

Charles Darwin may fairly be called the father of the modern doctrine of evolution. Evolution, to be sure, is an old idea, propounded by ancient Greek thinkers, and held by an occasional scholar through all the centuries. But in all that time, up to the days of Darwin, evolution had not attained to the dignity of a scientific truth. To make it such, it was necessary that some one should show *how* evolution had taken place. This was Darwin's task. Evolution, he said, has occurred by the operation of "natural selection."

But as Mr. Darwin himself often said, it was in evolution, and in natural selection only as a method of evolution, that he was interested. It matters not therefore, if the emphasis which Mr. Darwin and some of his followers placed upon this particular method of evolution be now somewhat modified. It is with evolution and not merely with natural selection that Mr. Darwin's name must be connected. What are the effects of the doctrine of evolution upon religion?

There is a sense in which religion may be said to be unaffected by evolution. If by religion you mean one's fundamental attitude toward the mystery of life, this attitude will be much the same upon one theory of the universe as upon another. Or if by religion you mean merely a practical code, the virtues of ordinary life do not seem to be intimately dependent upon any philosophy. In this restricted sense religion may be said to be unmodified by evolution.

But religion is not merely a matter of instinctive feeling, or practical conduct. It can not live without intellectual presuppositions. It is *here* that the doctrine of evolution shows its influence upon religion.

The first and most obvious effect of evolution upon religious thought, was to discredit entirely, as scientific accounts of the processes of nature, the Biblical story of creation. That this story held its place so long as it did, was due to two causes: first, that there was as yet no rival theory in a condition to command universal assent; and second, the Biblical account had from time-out-of-mind been regarded as supernaturally guaranteed. Evolution was still a guess,—or had only recently become anything more than that;—while the account in Genesis was "revelation"; and "revelation" was a knowledge supernaturally communicated, and therefore not to be questioned.

As the doctrine of evolution began to make its way, champions of the Biblical account undertook to show that that account was not inconsistent with it. They stretched the days of Genesis into long periods of time; they said it was not important that the sun was not created until the fourth day, they seized upon every accidental agreement of the order of creation in

Genesis with the order disclosed by evolution ; and in many ways they distorted the story of the Bible quite beyond the recognition of its original authors. But wholly in vain. So strained an interpretation could not long endure. It was obviously only a make-shift. Gradually it became plain that the story in Genesis means simply what it says ; and that if evolution is true, this story can have no scientific or historical value.

Not only that, but by the work of Biblical scholars, imbued with the historic,—which is the evolutionary,—spirit, it was soon proved that Genesis itself gives not one story of creation, but two, that the two are not compatible with each other, but in many important items quite contradictory ; that neither of these stories make any claim to have come from the hand of Moses, or to have been supernaturally communicated to him or to anyone else ; that one of them was written not less than eight hundred, and the other not less than eleven hundred, years after the time assigned to Moses ; and that both of them are part of an original Semitic tradition, borrowed from the Babylonian, and not distinctively Hebrew at all. The most that can be said for them is that they represent the thought of the time in which they were written, among the Hebrews, as to the history of our globe and its inhabitants. But as an account of what actually occurred, they were and are entirely discredited. This, I say, was the first and most obvious effect of the doctrine of evolution upon religious thought.

But this changed way of looking at the early chapters of Genesis, led to changes of opinion concerning other parts of the Bible. And these changes, with the work of Biblical scholars which has induced them, and with the evolutionary philosophy which was their back-ground, have led to a far more important change in religious thought. This change concerns the method of the divine operation in the world at large. The Bible contains records of many events long regarded as extraordinary. Not merely the creation of the world and man, but special communications of God to particular men, special interventions of God in the affairs of chosen people, remarkable doings of men under the inspiration of God,—such events, in short, as the stopping of the sun, the swimming of the axe, the raising of the widow's son,—events, in a word, which are not accounted for by the ordinary laws of nature, and which we have agreed to call miraculous.

That those who wrote the Bible believed that such things happened, there can be no doubt. But among people who, these days, give attention to these matters, the belief that such things ever did happen, is passing away. It is gone, quite, from the minds of many ; and it is going rapidly from the minds of many more. And this is chargeable to the doctrine of evolution. For if you have evolution you must have an ordered universe. And in an ordered universe there must be no power swooping down occasionally out of the sky to confound all our expectations, and "put us to intellectual confusion." The sun must go on, the axe must lie at the bottom of the spring, dead people must stay dead, and nature must pursue her course without interference. If evolution is the divine method, there is

no place for these miraculous interventions. And so, men who believe in evolution as the divine method are coming to the conclusion, that these extraordinary stories in the Bible represent what people in Bible times, believed about what had happened in times still earlier than theirs, but not what actually did happen. To be quite plain, the belief in miracles is going down, and will have to go down, before the doctrine of evolution. If this applies to one part of the Old Testament it will apply to another; if to the Old, then to the New also; to the birth of Jesus as to the creation of man, and to the career of Jesus as to the career of Elijah.

I do not say that the simple doctrine of evolution, taken by itself, proves all this, much less that it is now held by all believers in that doctrine; but it is the logical and necessary inference from the view of the world to which the doctrine of evolution has led.

This change of thought has been much hastened by certain Biblical studies of the last few years. If it can be shown, for instance, that the story of the plagues of Egypt was not written till eight hundred years after the events are said to have occurred; if it can be shown that the little section out of the book of Kings, containing those most astounding feats of Elijah and Elisha, does not come from the same hand which wrote the body of the book, but is like a piece of fairy-tale set down unaccountably in the midst of a sober history; if it can be shown that the story of Joshua's stopping the sun is only the misunderstanding by the prosaic writer of a piece of imaginative poetry still preserved in connection with it; if it can be shown that the earliest gospel knew no story of the miraculous birth of Jesus, and that the apostle Paul, our most ancient and reliable witness to primitive Christianity, neither worked miracles himself nor reported them of anyone else,—then one takes more easily to the belief that such things did not really happen. As matter of fact, the conclusions which I have just supposed, are among the assured results of modern Biblical scholarship. About this scholarship and its results, Mr. Darwin of course knew nothing; for it had scarcely got upon its feet in his day. But to the studies which have led to these results, men have been actuated by that corollary of evolution which we call the "historic spirit." By the influence, direct and indirect, of evolution, we are coming and are bound to come to a world which is no longer divided into natural and supernatural, but to a world all natural, or all supernatural, as you choose, but at any rate all one.

To the doctrine of evolution also, is to be traced, the interest of religion in its own history. It is recognized now that no one knows the Christian religion who does not know it historically. But to know Christianity well one must also know Judaism, out of which Christianity grew. But one can not understand Judaism until he studies it as a branch of Semitic religion in general. Not only so, but all religions have grown, by the operation of similar psychological laws, out of instincts that are essentially the same in all men; all religions, in other words, belong to one great family. Nobody therefore knows his own religion well who knows his own religion

alone. So has grown up the whole science of comparative religion. And this study has profoundly influenced the feeling of every man about his own religion, whatever that religion may be, in comparison with the religion of other men. No intelligent religious man, trained in the idea of evolution, can any longer flatter himself that his own religion is unique among the religions of the world, or attribute to it an origin essentially unlike that which he allows to all others.

These results of the evolutionary philosophy upon religion, important as they may seem, lie yet quite upon the surface. There are two or three which seem to me to lie deeper, and to have a vastly greater significance for the religious view of the world.

First among these I put the matter of the origin of religion. Not that any of our evolutionary philosophers, Mr. Spencer, for instance, have given us a trustworthy account of that origin. Mr. Spencer's speculations concerning the origin of religion have all the historic value of the first chapters of Genesis. But man is the highest product of the universe which we know; and the spiritual life of man is the highest product of the history of our human kind. And man, and his spiritual life are products of the evolutionary process. But any process of evolution must be judged by its highest terms, not by its lowest; by its outcome and not its beginning. The age-long process of which human life is a part, has issued, then, in this which we call the spiritual life of mankind. Of this spiritual life religion is not the whole, but it is the flower. At the top of the whole process, therefore, stands religion. But the process goes back to the beginnings of human life, and back of that into the beginnings of animal life, and back of that into the processes of cosmic evolution. Now just as we interpret any process of evolution by its latest terms,—as we know what the peach tree is by the peach that grows on it,—so we know what sort of universe we have here, when, by a natural process of evolution, without any interference from any higher sphere, we see the spiritual life of man coming out as the fruit of the whole process. We know by this, that we have a universe in which religion, morality, idealism, is no late invention, and no manufactured article, but is implicit in the whole and from the beginning. Upon some other theory than that of evolution you might have a religion in a universe which was not intrinsically a spiritual universe; upon the theory of evolution you can get religion only out of a spiritual universe. There was for a long time a contention on the part of religious people, that conscience could not have been evolved by any natural process; it must have been implanted by some special and supernatural act. I much prefer to admit that conscience, with all that follows from it, is a product of the natural order. I prefer to admit this in the first place because it seems to be proved; but in the second place, because in a universe which by its natural process flowers into conscience, conscience,—with all that it implies,—has from the first been implicit. For religious purposes such a universe is vastly better than one into which the whole higher side of life has

had to be injected. Upon the evolutionary theory, therefore, we have, first of all, a spiritual universe.

In the second place, there comes to one accustomed to think in terms of evolution, a sublime sense of kinship; of kinship not only with the whole human race, but with all the creatures of our mother earth, and with nature herself. This sense of kinship has appealed to the most sensitive minds of all the ages. It is what St. Francis felt when he thanked God so beautifully for "our sister the wind and our brother the rain." It is what Jesus felt when he said, "consider the lilies of the field." It is what Robert Burns meant when he wrote his address to the Mountain Daisy and the Mouse. But upon the theory of evolution this sense of kinship has not merely a sentimental, but a scientific basis. For the doctrine of evolution means that we humans have come out of the process; not made by someone who stood outside of it, and who thrust us into it at a particular point in time,—but we have come out of it, as the flower out of the plant and the fruit out of the tree. But out of this same universe, by other workings of the same process, have come all other beings and things that are. "She is bone of my bone, and flesh of my flesh," said Adam, when his eyes beheld the beautiful creature whom Jahweh had made for his companion. So the modern man, trained in evolutionary ideas, may look at the whole great universe and say, "bone of my bone, flesh of my flesh, spirit of my spirit," and may know that he is kin not merely to all who have worn the form of our human kind, but to every creature and thing that are or have ever been. Evolution means kinship! And kinship, the kinship of man with man and with the power that lives in man and in nature, is and has always been the deepest word of religion.

But supreme among the effects of evolution upon religion has been its agency in giving us a new and larger God. This may seem strange, when the first effect of evolution seemed to be to remove God altogether. It was only the small and absentee God of medieval thought whom evolution removed. And Him it removed, to make a place for the larger, nearer, more universal and infinite God of modern thought. . . . For the modern man can not think of God as living somewhere outside the universe of nature and of orderly process, and now and again stooping to mend something that had gone wrong in this order, to hand down some piece of information about himself, or to administer a rebuke or a consolation. He must think of God as inside, not outside and beyond; for of outside-and-beyond, the modern man knows nothing. He must think of God as the indwelling of all things, the life in all life, the spirit in all spirit, the end and goal and meaning of all. No smaller God, no God who works here but not there, now but not then, in man but not in nature, will do for the modern thinker. He must have a God, in whom we and all things move and have our being, and who moves and has his being in us and in all things, and outside of and beyond whom nothing is or can be.

This modern idea of God, like the modern doctrine of evolution, is in

reality a very ancient idea. Like the idea of evolution it was propounded by old Greek thinkers, and has had here and there an advocate among the thoughtful of all ages. But like the doctrine of evolution, it has assumed in our modern world a new and commanding place; and it was with the rejuvenation of the doctrine of evolution, at the hands of Darwin and his successors, that this conception of God which the builders had so long rejected, came into its place as the head of the corner.

For with evolution as the universal method, we must either have a God of this sort or no God at all. "We can find no time" says the evolutionist, "when God stepped in and began to do things." "We do not need any such time" says the modern theist, "for we believe in a God who has worked in all time,—in the time of the whirling star-dust as in the time of the beginnings of human life." "We can find no place" says the evolutionist, "where God has broken through into the natural order." "We are not looking for any such place," replies the modern theist, "for we believe in a God who works in all places, and who is at all times and places the essence of the natural order." "There are no breaks in nature," says the evolutionist, "no miracles, no cataclysms, no crevices through which the divine may leak down into the natural and the human." "We know it," replies the evolutionary theist, "but the divine is not somewhere outside the natural and the human"; and so we have come to a God in whom nature and man exist, and outside of whom is nothing either natural or human. A God of this kind is the only God in whom the evolutionist can long believe.

How revolutionary this idea is for religion, you can see for yourselves. There is no longer any "natural" set off against the "supernatural," one of them divine and the other something less. There is, instead, a divine nature. There is no longer a humanity naturally at enmity with God, but a divine humanity, seeking in endless ways and with varying success to become conscious of itself. There is no longer that old and fatal distinction between "what man discovers and what God reveals." All knowledge, whether concerning God or man, has come by revelation, but also by discovery. Whatever man discovers he discovers by the spirit of divine wisdom and insight that is in him; and whatever he discovers is there to be discovered, and so is revealed; and all knowledge, of whatever sort, is ultimately knowledge of God since there is nothing outside of God, to be known. Revelation is universal. Natural law is the voice of the living God. Conscience is His word in the heart of the individual man. History is his witness. The divinity of Jesus is not in spite of his humanity, nor apart from it, nor in addition to it, but in it and through it. The only absence from God is forgetfulness of his presence; the only association with him is to be worthy of him. Religion, in short, becomes a new thing, when at the back of it you have a God no longer partial, fitful, remote, but present, universal, and truly infinite. And this change in religion has been worked, ultimately, by the modern doctrine of evolution.

I am not content, therefore, to maintain that evolution is not inconsis-

tent with religion, and that religion can survive in spite of it. That would seem to me like maintaining that the science of medicine can survive the germ theory of disease. Mr. Darwin said that his theory of evolution left the matter of theism right where it always had been. With his mind occupied with his own peculiar studies, and his soul harried by the people who accused him of having destroyed religion, no wonder he was content to affirm that religion had after all not been destroyed. But the man who restricts himself to such an assertion these days, has missed the spiritual import of the evolutionary philosophy. Evolution has given us a spiritual universe, a kinship with that universe and with all in it, and a God who is truly adequate to our needs. It has transformed religion from a thing manufactured, artificial, and merely human, to a thing natural and cosmic. Evolution is itself the most significant revelation that has yet come to us concerning the divine purpose and nature. To one who thus views the doctrine of evolution, Mr. Darwin is no mere observer, patiently unraveling the mystery of physical processes; he has become a prophet of the living God.

COMMERCIAL CONFERENCE

SOME OBSERVATIONS UPON COMMERCIAL COURSES BASED ON A RECENT VISIT TO ENGLISH SCHOOLS.

PRINCIPAL J. REMSEN BISHOP, DETROIT EASTERN.

What one notices on all hands when he is investigating English education is that in England there is much skill in putting the best foot forward. In this country there is a tendency rather to overdo things in the opposite direction, so that an English visitor (*vide* the Moseley Report) gets a wrong impression from encountering an honesty in exhibiting school work with which his experience at home has not familiarized him. Few English teachers that one meets in his travels among the schools seem to be in a critical attitude toward the English system, but rather in the general attitude of acquiescence. Educational advances over there come rather through suggestion from a few teachers in prominent positions than through a consensus of opinion among those actually engaged in the work of instruction. Thus theory and practice are naturally not seldom found at variance, and it is not best to trust too implicitly the printed programme. These few introductory words are by way of caution.

The moment we get outside the old established humanities, we find in England that no subject of study quite ranks in public esteem with those time-honored but pedagogically dubious subjects for instructing the young intellect. The idea that education in a social sense ought not to be a bulwark erected to prevent some one's encroaching on your intellectual or social preserves, but simply a fitting of the combined intellect of the race to comprehend and profitably fit into the present environment of the race: this idea penetrates slowly everywhere, but nowhere more slowly than in England. Consequently we should expect to find commercial branches strictly confined to their utilitarian side, with rather a scornful neglect of the possibility that there might be philosophical and ethical phases of these subjects that would cause them to rank with the classics, modern language, etc., as means of liberal training. In this country we are more and more inclining to the view that every activity that naturally engages the energies of a large number of the members of the human race has underlying principles of sufficient importance to be studied on the broadest basis. We are also inclining to the view that the public school system can not give much time to outworn subjects or to subjects that are in their nature of receding interest, nor can it afford to permit those subjects to retain a vantage ground of privilege in anything that concerns public service in the professions or in the institutions of secondary and higher instruction. To this end we are doing something more with every subject taught in our schools than the mere training in the mechanics of the subject. In the teaching of commercial branches in our schools we shall more and more require teachers of general culture as well as of practical mastery of the subjects. In England, so far as I could observe, there is no aim to so develop the new and practical subjects, i. e., subjects with possible vocational object, into means for liberal education as well. There the bookkeeping is the particular type of account-keeping that the business of the district requires. If it is a brewing district, then the instruction in accounting is all tinged with the practical problems of the brewing industry. Similarly, if it is a retail district, the instruction is directed toward the kind of accounting that that style of business requires.

In Scotland there is a course found more nearly approximating an American high school Commercial Course:

Session 1908-1909.

George Heriot's School, Edinburgh.

COMMERCIAL COURSE.

The Commercial Course has been instituted with the view of providing for those pupils who are to enter on a Business or Commercial career. The Course covers two years and includes, in addition to a thorough training in English, German, and Commercial Arithmetic, the study of specialized subjects outlined below.

Upper Department,

First Year (Class V.)

Commercial Practice,—The ordinary operations of a Counting-House, including Correspondence and Précis Writing, Organization of Commerce, Money and Banking, Insurance, Stocks and Shares, Exportation and Importation of Goods, Ships and Shipping, Exchange.

Commercial History,—The Commercial and Industrial History of the British Islands to 1150 A. D.

Commercial Geography,—Relation of Commercial Development and Distribution of Population to Climate and Physical Features—Raw Materials of Commerce—Means of Transport—Products, Leading Industries and Communications of the British Empire.

Book-Keeping,—Keeping of Accounts—Use and Practice of Journal, Day-Book, Invoice-Book, Cash-Book, and Ledger—Profit and Loss Account—Balance Sheet.

Phonography,—The Theory and Practice of Shorthand as developed in Pitman's Manual of Phonography.

Second Year (Class VI.)

Economics,—Scope and Methods of the Science—Land, Labour, and Capital in their relation to the Production of Wealth—Distribution and Exchange of Wealth—Trade Unions and Strikes—Industrial Co-operation—Free Trade and Protection—Principles of Taxation.

Commercial History,—The Commercial and Industrial History of Britain from 1550 to the Present Time. Sketch of the Commercial development of Britain's principal foreign competitors.

Commercial Geography,—The Products, Leading Industries, and Communications of the Chief Foreign Countries, with special reference to British interests.

Book-Keeping,—More advanced Practical Work, including Bills of Exchange.

Phonography,—Further Practice in Pitman's Shorthand with a view to attaining speed.

I will now call your attention to an elaborate, but very severely practical scheme found in the Continuation Classes (Evening Schools) in Glasgow.

Under the heading "Commercial and Advanced Classes," in the printed programme, are described classes in: "Arithmetic and Mathematics; English Grammar, Composition and Literature; Shorthand; Speech Reporting Classes; Bookkeeping; Special Classes for Bank Apprentices (Institute of Bankers' Examination) for admission as Associates; Penmanship; Commercial Correspondence; Commercial Geography; French, German. I add the synopsis of the complete course in Book-keeping.

BOOK-KEEPING.

Two evenings a week.

Beginners' Class.

In this class the course of instruction will aim at imparting a thorough knowledge of the fundamental principles of Double-entry Book-keeping, and the uses of the ledger and subsidiary books, leading up to an acquaintance with the practical work of the counting-house.

Before the completion of the course, students will be able to prepare profit and Loss accounts and balance sheets from books where the transactions are of a simple nature.

Intermediate Class.

The work of this class will be preparatory to that of the advanced class, and should students show sufficient progress during the session they may be transferred to the higher class. Students who already have a slight knowledge of the subject should enroll in this class.

Advanced Class.

This class is formed in the interest of pupils with a more extended knowledge of the subject. A part of the term will be devoted to practical, or applied book-keeping, embracing opening, balancing, and closing books as used in various businesses—wholesale and retail merchants, manufacturers, contractors, trading companies, &c.—drawing up trading, profit and loss, consignments accounts, balance sheets, &c. All students enrolling in this class will be expected to enter for the Society of Arts' Grade II. Examination.

Higher Book-keeping and Accounting.

This class is a special one formed in the interests of students who hold the Society of Arts (Grade II.) Certificates, and the work will include the following :—

A thorough knowledge of double-entry as applied in the counting house of a private company. Accounts of branches and departments. Self balancing, loose leaf, and general and private ledgers. Income tax returns. The closing of the books of private companies, sale of the business; the preparation of bankruptcy statements.

The flotation, management, reconstruction and winding up or liquidation of a limited company, including the writing up of the statistical books, and preparation of the returns for the registrar of joint stock companies.

Double account system, trust and executry accounts, cost accounts, &c. The main work of the session, however, will embrace a minute study of

the requirements of the Society of Arts' Grade III. Examination and the Senior Examination of the London Chamber of Commerce.

These classes cover the whole ground necessary to become an expert book-keeper.

It will be noted that little has been made of the generally educative side of commercial study, but rather there is an introduction at the earliest possible moment, of the trade side, the actually employable side of the work for wage earning.

The course of the Birmingham and Midland Institute is noteworthy as offering Commercial French and Commercial German. I read from the prospectus :

FRENCH COMMERCIAL: *Elementary*—The rudiments of Commercial French will be taken up in this section with the object of providing students with the requisite knowledge to enable them to prepare for the more difficult and technical work of the advanced division. French sentences on business matters will be translated into English, and *vice versa*. Commercial phrases, extracts from letters, orders, &c., will be written upon the blackboard and explained, and in this way the grammatical rules of the language will also be exemplified and worked up. *Advanced*—This class is intended to give advanced students practical assistance in becoming efficient correspondents in Commercial French. In order to effect this, business letters will be written upon the blackboard, and the requisite explanations given. Difficult technical sentences, business terms, &c., will be translated and discussed, and students will likewise be instructed in the various sections of French study necessary for the examination of the Royal Society of Arts, and also be assisted in working up the books recommended by the Society.

GERMAN, COMMERCIAL: *Elementary*—Translation of commercial sentences and the working up of German grammar on a business basis, the rules being illustrated by extracts from letters on mercantile matters. Rendering of easy business letters and extracts from German into English; explanation of technical terms and phrases and a start in conversation in German on business subjects. *Advanced*—The translation of German commercial letters and order sheets into English; the reading of German writing; the acquisition of German technical terms and business phrases; composition of letters in German and other special work as required for the examination of the Royal Society of Arts.

This is typical of the Commercial French and German throughout the commercial schools of Britain, and indicates the good quality of the work. We might well, in America, imitate more widely in the high schools this application of language study to commercial use.

The Birmingham and Midland Institute also has an employment bureau, described as follows :

"For the convenience of members of the Institute who have vacancies

to fill in their offices, a register is kept in the secretary's office of vacant appointments, and of the qualifications of those students who are seeking employment. Members are invited to enter in this register particulars of any vacant situations in their offices."

The ordinary evening classes of Birmingham are all largely commercial and technical. I quote the statement of some of the diploma courses of the "Higher School":—

"The Higher School is organised to meet the requirements of the following:—

(a) Students who have completed a two years' course in the Lower School, or who furnish the principal with satisfactory evidence of a similar level of attainment.

(b) Young business men and women qualified to enter upon, and able to give the necessary time to a course of study extending over two or three years.

(c) Business men requiring instruction in special branches of commerce.

(d) Candidates preparing for the following professional examinations:—Chartered Accountants, intermediate and final; Incorporated Accountants, intermediate and final; Chartered Institute of Secretaries, intermediate and final; Incorporated Law Society, intermediate and final; Institute of Bankers, preliminary and final; Institute of Municipal Treasurers and Accountants (Incorporated), intermediate and final; Institute of Actuaries.

(e) Students preparing for the matriculation examinations of the Universities of London and Manchester."

Regulations Governing the Award of Diplomas in Commerce.

The following are the Diploma Courses of Study organised in the Higher School and in the School of Languages of the Municipal Evening School of Commerce:—Accountancy, banking and economics, secretarial work, municipal work, general commercial work, foreign trade and correspondence, foreign languages.

A Diploma in Commerce for each of the above courses will be awarded to students who have regularly attended at the school in all the subjects of the course, and who comply with the following conditions:—

1. *Attendance.*—Register a minimum of 120 hours' attendance in each of two consecutive sessions, or of 90 hour's attendance in each of three consecutive sessions, in the subjects of the selected diploma course.

2. *Homework.*—Receive a minimum of 60 per cent of the total marks awarded each session for home exercises in each of the subjects studied.

3. *Examinations.*—Candidates for Diplomas must pass, within a period of three years from the time of entering upon the Diploma Course, the following examinations:—

For the Diploma in Accountancy—(a) The advanced grade examinations of the Society of Arts in Accounting and Banking; book-keeping; commercial law. (b) The School examinations in arithmetic, secretarial work, company law.

For the Diploma in Banking and Economics—(a) The advanced grade examinations of the Society of Arts in Accounting and Banking; commercial law; political economy. (b) The School examinations in arithmetic, the theory and practice of banking, public finance.

For the Diploma in Secretarial Work—(a) The advanced grade examinations of the Society of Arts in Accounting and Banking, or book-keeping précis; commercial law. (b) The School examinations in arithmetic, company law, secretarial work.

For the Diploma in Municipal Work—(a) The advanced grade examinations of the Society of Arts in Book-keeping, or accounting and banking; economics. (b) The School examinations in arithmetic, local government, municipal law, municipal accounts, local authority finance, public finance.

For the General Commercial Diploma—(a) The advanced grade examinations of the Society of Arts in Accounting and Banking, or book-keeping; commercial history and geography; economics. (b) The School examinations in costing and cost accounts, the theory and practice of commerce, patents, designs and trademarks.

For the Diploma in Foreign Trade and Correspondence—(a) The advanced grade examinations of the Society of Arts in two foreign languages, including oral tests; commercial geography, or commercial law. (b) The School examination in banking and exchange.

For the Diploma in Foreign Languages—(a) The advanced grade examinations of the Society of Arts in two foreign languages, including oral tests.

The diploma will give a statement of the subjects studied and of the examination successes obtained.

No student will be admitted to a diploma course who does not satisfy the principal that he is qualified by his present knowledge to enter upon such a course of higher study.

Students desirous of qualifying for diplomas are required to make to the principal, not later than 1st January, 1909, a written application on the special forms provided. No application will be considered unless this regulation is complied with.

Subjects of the Diploma Courses.

Accountancy: First Year—Arithmetic, book-keeping, company law, commercial law. Second Year—Accounting and banking, auditing and book-keeping, commercial law, secretarial work.

Banking and Economics: First Year—Arithmetic, book-keeping, *theory and practice of banking, commercial law, political economy. Sec-

ond Year—Advanced accounts, practical banking, commercial law, political economy, *public finance.

Secretarial Work: First Year—Arithmetic, English, book-keeping, commercial law, secretarial work. Second Year—Arithmetic, accounting and banking, company law, secretarial work, English and précis.

Municipal Work: First Year—Arithmetic, book-keeping and auditing, *municipal law, *local government, political economy. Second Year—Accounting and banking, municipal accounts, *municipal law, *local authority finance, *economics—public finance.

General Commercial Course: First Year—Advanced accounts, commercial law, *income tax practice, *accident insurance and employers' liability, political economy or commercial geography. Second Year—Accounting and banking, *costing and cost accounts, *theory and practice of commerce, commercial geography—British markets, economics of commerce, *patents, designs, trademarks.

Foreign Trade and Correspondence: First Year—*Banking and exchange, commercial geography, two foreign languages. Second Year—Commercial law, commercial geography—British markets, two foreign languages.

Foreign Languages: First Year—Two foreign languages. Second Year—Two foreign languages.

The Heriot Watt College of Edinburgh offers Spanish, as do indeed several of the higher institutions having commercial work. Being a high school, it also has a class in principles of accounting, for advanced students, and in actuarial science, for those who are desirous of passing the final examination of the Chartered Accountants of Scotland. I insert, as of special interest, the synopsis of the Commercial Language Work and the Course in Commercial Law in the Heriot-Watt:—

Commercial Class in French.—Students joining this class are required to have previously attended the French classes in the College for two sessions, or to have passed through an equivalent course elsewhere, such as that provided in the Evening Schools of the School Board. The class meets two hours a week.

Phraseology of Commerce—with frequent oral practice, dialogues, letters, advertisements, telegrams, exercises and translations relating to trade, manufacture, travel, etc.; dictation.

Commercial Class in German.—The class meets two hours a week. This is a senior class meant for students who have reached at least the intermediate standard, or have passed through an equivalent course elsewhere, such as that provided in the Evening Schools of the School Board.

* Lecture Courses.

Commercial correspondence; English letters are written and corrected. Numerous German letters translated into English, and the students write some original compositions in German; geography; dictation.

Commercial Class in Spanish.—Study of irregular verbs; read and written exercises on the same; commercial terms; letter-writing and conversation on commercial subjects. The Spanish language only being used during the instruction.

Commercial Law.—The course deals with the law of obligations and contracts generally; contracts of sale; principal and agent; partnership; joint stock companies; the law of carriage; cautionary obligations; bills of exchange; bankruptcy; insurance.

These subjects will be illustrated in the Practice of Commerce class by reference to documents.

I will conclude by reading examination questions on book-keeping, shorthand and typewriting, set by the Midland Counties Union and practically governing the work in Bedfordshire, Cambridgeshire, Staffordshire, Warwickshire and Worcestershire:

Subjects classified as Commercial: Arithmetic, book-keeping, geography, handwriting and copying, commercial correspondence and office routine, English history, mensuration, shorthand, typewriting.

THE STUDY AND PRACTICE OF ACCOUNTANCY.

R. J. BENNETT, C. P. A., PRINCIPAL DETROIT BUSINESS UNIVERSITY.

This subject is very dear to me, and I shall try to present it from the standpoint of the commercial teacher, the school manager, the bookkeeper and the accountant. I have prepared a paper with the hope of bringing to your attention some of the essential phases connected with the study and practice of the profession which today is interesting so many people.

The business schools of the country are deserving of credit for the good work they have done, and I am safe in saying that the accountancy profession would not be what it is had it not been for the pioneer work done by business school men. Many of the best accountants have been commercial teachers and the results attained indicate a mastery of ground principles and an early inclination to become leaders in the work. The fundamental principles of bookkeeping as taught in business schools should be such as are worthy of being retained and remembered when one becomes a practicing accountant. In the majority of cases I believe this has been done, but unfortunately in others so much cannot be said. The business schools I say are entitled to credit, but on the other hand they have frequently brought

criticism upon themselves by looseness of methods, lack of adequate equipment, and by employing inexperienced instructors. Those who have been attempting to turn out embryo accountants have undoubtedly done well, but they themselves have frequently been content to remain unprogressive while business conditions and practices continue to advance. In this respect the influence toward progress has been counteracted, and teachers of bookkeeping have failed to keep pace with the progress of accountancy. In teaching, it is imperative that we follow pedagogical principles, but it is true also that we should follow as nearly as possible those principles which are practiced in business offices—the very things which our students are expected to do, and do well, when they leave us. If we do not face the matter from a practical standpoint we shall make partial failures as commercial teachers.

The universities are establishing commercial departments, the high schools have long since done so, and the specially endowed institutions are making rapid progress in commercial instruction. Even the Y. M. C. A. with its numerous departments of instruction is bidding strongly for its share of patronage. All of this points in no uncertain way to the present tendency toward practical training for business pursuits.

To satisfy the pressing demand for authoritative instruction along the lines of higher commercial education and accountancy, a few of the great universities have established departments of evening instruction which are patronized largely by bookkeepers, young accountants and business clerks. Among these institutions may be mentioned the Universities of New York, Pennsylvania, Colorado, Cincinnati, Northwestern University, and others. This has been brought about by the untiring efforts of practicing accountants because there was and is yet a crying need for evening instruction in accounting, auditing, business law, business administration, economics, etc. It is to be regretted that our own State University has not yet seen fit to give its recognition to the cause of accountancy by establishing evening classes for those who are ambitious to enter the accountancy profession and are occupied during the day. Training for accountancy practice is recognized as a necessity, but in seeking authentic instruction accountants could not get it at the business colleges or the high schools; consequently it became necessary to turn to the state university whenever it was possible to find one willing to undertake the work. From this we see the business schools are not considered very favorably by accountants. Why should it be thus? I am sure that we are anxious to have our schools progress and to merit the esteem of professional accountants. Our work and interests are in common and we can succeed in attracting their attention only by adopting practical methods, by properly preparing ourselves for teaching the subjects, and by ceasing to promise every student who enters our rooms a high salaried position after spending a short term of months in our classes. We have an accountancy course in The Detroit Business University, but ours is possibly the only purely business school in the country maintaining such a course of study.

The Michigan certified accountants are backing it up as individuals and have kindly given their aid in every possible way, but what is really needed is an established three-year evening course of study leading up to a recognized degree or to the C. P. A. examination.

The teacher's qualifications. It is unwise to offer criticisms without suggesting a means whereby improvement may be made; therefore with the hope of stimulating the commercial teachers to further efforts I shall endeavor to advance a few helpful hints. The existing weakness is not entirely from lack of educational qualifications, but from lack of experience and proper training for the special work. Teachers of business and managers of business schools should be versed in the principles of business from actual contact therewith and should have served a reasonable term as bookkeepers in the offices of business concerns. The lack of this training, fellow teachers, has helped to bring our calling to some extent into disrepute. Of course under conditions as they exist we cannot dictate to the numerous commercial schools nor can we cause them to improve their methods. Yet we can among ourselves co-operate in the endeavor to show that we are capable of progressing, and though we may not have had all of the privileges suggested there are still many ways by which improvement can be brought about.

The Accountant's Work. In the ever broadening field of accountancy there are many things that the accountant is called upon to do, and the success that he may attain will depend largely upon his preparation and ability, while a great deal more, perhaps, will depend upon his personality, his attention to details, and the manner in which he conducts his work. This is true also of the doctor, for one may make \$1000 per week while the other may not make \$10. Indeed the accountant's field may not yet be as broad as the doctor's and his patrons may be fewer, but it is a field which is rapidly broadening and which will without doubt ere long take its place with the professions of law and medicine. Business men are demanding regular audits, business concerns recognize the necessity of adopting modern accounting systems, while the banker or capitalist realizes the importance of the accountant's certificate to the Statement or Balance Sheet of the borrower. Business is becoming so complex, and the demands upon men of affairs so exacting that they are more and more becoming dependent upon the accountant's certificate as a proof of the accuracy of financial statements. At one time the visit of an accountant to a business office meant that something was wrong and only at such a time were his services needed, but the practice is now so common that it is rather unusual for well regulated business concerns not to have regular audits. From this brief summary of conditions commercial teachers may get some idea of what their students are likely to be called upon to do, as well as an index to the preparation the teacher should make in order to prepare young candidates for business or accountancy honors. It is true also that the accountancy profession offers many inducements to well qualified men, and any commercial teacher who is seeking a

change may with profit occupy his spare moments in preparing for recognition therein. I am safe in saying that the possibilities for success are greater than in any other profession, and there is every evidence that they are rapidly broadening. Indeed it has been said that all of the public accountants of the United States combined could not do the work of New York alone, if the business men of that great metropolis were entirely awake to the benefits accruing from independent examinations by qualified public accountants. The English and Scottish chartered accountants are well known throughout the world for their excellent work, thorough preparation, rigid qualifications and high ethical principles. In the British Isles alone there are today at least four thousand chartered accountants while in our own country the entire roll of certified public accountants could be numbered in the hundreds. If in England during the past fifty years the accountancy profession has advanced from almost nothing to a membership of several thousands, just think what the possibilities are in a country like ours. In Canada there are over two hundred chartered accountants and their requirements have attained to a high standard. Accountancy laws have been in force in that country for nearly thirty years, while accountancy legislation in the United States dates only from 1896. The laws governing C. P. A. examinations are made by the different states and a Board of Accountancy appointed to carry them into effect. The requirements for such examinations usually depend upon the Board of Examiners themselves and they formulate their rules and regulations as a rule in accordance with their own training and experience as accountants.

As I have said, the work of the accountant will necessarily bring him into all lines of endeavor, and his ability to succeed will depend upon his ability to please his clients, to make straightforward reports, and to give satisfaction. If he understands his work thoroughly and will do it well he is sure to succeed, but if he attempts to do it in a slipshod, careless, inaccurate way he is just as sure to fail. No accountant can afford to do poor work or to make slovenly statements, and he therefore should endeavor at all times to do his work well no matter how insignificant the job may be or how small the fee. If the job requires \$100 worth of work, it is best to do one hundred dollars worth of work even if the compensation be but \$50. This practice of doing everything well will have a good effect upon clients and will eventually bring good returns. I have in mind an accountant who has a large clientele and whose services are constantly in demand. The president of a large bank told me that he always employed this accountant when he had important work to be done, because, he said, "Mr. _____ is thoroughly reliable and does every detail of the work well." The same sentiment regarding this same accountant was expressed recently by a leading judge. What an excellent testimonial! A main feature of this accountant's work consists in treating the business of his client as sacred and confidential. Not even an assistant in his office is allowed to tell another assistant about

the work in progress unless they both happen to be employed on the same job. This is a plan upon which all accountants must work if the confidence of business men is to be attained, and I unhesitatingly make the statement that the integrity of American accountants is beyond question. It may be stated that the qualifications of an accountant are a high school education or its equivalent, experience as bookkeeper, also a knowledge of accountancy and kindred subjects. If he has not already the necessary qualifications let him endeavor in spare moments by study and research to qualify himself for the work.

Here are some of the things an accountant may be called upon to do: Open sets of books for individuals, partnerships or corporations; close books of different kinds; prepare suitable financial statements; locate errors; make trial balances; make regular or periodical audits; make partial or complete examinations of certain portions of books to settle points in dispute; make examinations for the purpose of detecting supposed fraud or embezzlement; make examinations of books for the benefit of creditors, a partner, stockholder, or intending purchaser, as well as for a bank or individual from whom a loan is sought; make examinations of books of a company about to be amalgamated with another or to be taken up by a competing concern; make an examination of estates in bankruptcy or in the hands of a trustee, receiver or administrator; install suitable cost systems in manufacturing concerns of moderate or large dimensions, and advise what the methods of procedure in each should be; audit, investigate, and prepare the accounts of banks, trust companies, loan associations, and other financial institutions; audit and prepare suitable systems for municipal or other corporations. That is quite a list, but not very extensive. It will be enough to give an idea of the actual work required.

Let us now look at the matter from the commercial teacher's standpoint. He is looked upon as a teacher and not as an accountant, and in few cases is he expected to have more than ordinary ability as a bookkeeper. It is true that commercial school men are often called upon to give advice in accountancy matters, but in few cases are they expected to do exceptional work. Few commercial school men or commercial teachers while teaching have won distinction as accountants, and probably not more than a dozen have passed the C. P. A. examination. I believe there should be more, and my advice to you who are in the commercial school profession is to broaden yourself as much as possible along the lines that you are called upon to teach. By so doing you will enjoy your work more, be a better teacher and be able to enthuse your students to a greater extent. All in all it will be better for you, better for the community, better for your students, and better for business men when it becomes known that you are accountants instead of merely bookkeepers or teachers of same. If you are connected with a good school you should be able to secure work outside of school hours, providing you are capable of doing it. By a little effort odd jobs of bookkeeping can be

secured. You are in the school room most of the time and therefore must use spare moments only for self improvement, but I believe that by setting aside at least one hour per week for one year considerable advancement can be made. That would be 52 hours per year. If two or three hours per week, the possibilities will be doubled or trebled. Make a renewed study of the text book which is now being used in your school room and which to you seems so familiar. There may be some things in it with which you are not entirely familiar. If so, get down to the bottom of them by investigating same from every standpoint. After this is completed extend your study by taking up different lines of business, by making a study of each through the different processes up to and including the accounting systems themselves. Next take one or two good books on accountancy and study them thoroughly. After that make a study of business law, finance, industrial and commercial geography, and supplement this by devoting some of your spare time to assisting in the office of some business firm. You must keep in mind, however, that in order to succeed as an accountant it is necessary that you have a knowledge of business industries and commercial geography. In arranging a system for a manufacturing establishment, as brewery, sugar company, furniture factory, or gas works you must know something about the processes through which the raw materials go before reaching their final shape. In order to supply proper records it is necessary to understand the work through all of its details, since through this knowledge alone can an accountant devise a system which will give satisfaction without too great an outlay of time and money.

In the mornings our slumbers are disturbed by the rattle of milk cans. Did you ever investigate the methods connected with the establishment which employs these milk wagons? Do you know how the records are kept, how the business is managed, and how the delivery system is conducted? The cattle must be taken care of, fed and properly stalled; the horses and wagons must be cared for, men must be employed to make deliveries, a proper system of account keeping must be maintained, and collections must be made. An investigation into these matters would prove of interest by beginning with the delivery wagon and proceeding up to and including the work of the head bookkeeper. The same process of investigation may be carried out with a grocery, with an ice plant or with a laundry. Indeed the field is boundless, and on all sides there are matters of interest to the person who is wide awake. Study one business at a time and try to master its details before passing to the next. I may say that many commercial teachers and bookkeepers fail when the business system of an office looms up before them. We are familiar with the ledger, journal, cash book, and other books of original entry, but when it comes to the records and office details we often are handicapped. In the school room a student is taught the use of blank books of all kinds, and the systems of account keeping for different businesses, but in many cases the details, blanks, cards and record slips are omitted. This is

why so many young people fail when they first take positions. They find all kinds of office devices, cabinets, files, records, cards and loose-leaf systems, many of which they had not before been made familiar with. It would seem from this fact that we should give more attention to office methods, records and details and not so much to mere bookkeeping. With reference to the teacher himself, he may make a special study of these by inquiry and observation. The shelves of any good stationery store are usually filled with office appliances and other paraphernalia. Examine all of these at your first opportunity as well as the several blank books, forms and record blanks which they have for sale. The shelves of law stationers may also be examined with profit for the study of legal forms and legal blanks. It is advisable to determine the use of each form examined before passing to the next.

Seek for yourself, keep your eyes open, observe, get in touch with business men, and secure from life all that there is in it. Secure from the Secretary of State the laws regulating corporations, also the different blanks concerned in the making of application for incorporation, making annual reports, etc. Write to the banking department for similar information with reference to banks, and ask for the last annual report of banks doing business in this state. A great deal can be learned from these blanks, and the state officials are as a rule anxious to accommodate in every way possible. Write to the Comptroller of Currency in Washington for the National Bank Act and for other information pertaining to national banks; and secure from the Public Printer in Washington forms and laws regulating the handling of bankrupt concerns. Study the financial pages of newspapers and magazines, read financial journals, keep in touch with the business progress of your city and state, read as much law as possible, study corporation and municipal finance, secure examination papers set by the boards of examiners for C. P. A. certificates. Write out the answers to these questions and have them examined by some person who is capable of passing upon their accuracy. In order to secure this privilege it may be necessary to hire the services of some accountant, but I fully believe that it would pay you to do so. If you are connected with a business school or high school, write to the proprietor of some manufacturing concern and state that you would like to examine into his system of bookkeeping for the purpose of broadening yourself. If this privilege is sought after properly it is seldom refused, and I have found from experience that head bookkeepers are usually willing and anxious to explain their systems so long as they know the person seeking information is not to use it against them. Arrange a time to make such an examination and in doing so remember not to inconvenience the bookkeeper or the progress of business in any way. In some cases it may be well to compensate the bookkeeper for his trouble, by taking him to dinner or possibly by treating him to a box of cigars. While examining an office system take note of the blanks and records used, the system of account keeping in vogue, and the manner of conducting the entire office. Never examine a set of books or system

without afterwards thinking the matter over and making a careful summary of what you have learned. If you are in doubt on any point, telephone to the bookkeeper or auditor in charge and secure the desired information. No matter how large or how small the set of books you have examined, never pass it by without satisfying yourself that you are familiar with every detail thereof. Watch the newspapers and advertisements for articles which may be of interest to you. Bind these in a binder or scrap book for ready reference in case of need, and remember to observe every little thing that is likely to broaden your knowledge of this field of work. It may be possible for you to devote your Saturdays to assisting in the office of some business concern, for which your only compensation will be a broader knowledge of the business. If possible, attach yourself to some good accountant and devote your Saturdays and holidays gratis to giving assistance in whatever line of work he may place you. Probably you can get the privilege of accompanying him or some of his men occasionally to firms where audits are in progress or where systems are being installed. If you are a promising fellow the accountant will be glad to have your assistance, and in this way opportunities for your advancement will open to you that could not be reached in any other way. By all means get in touch with accountants and bookkeepers and try in every way possible to progress in your chosen work. Join some association of bookkeepers and take part in the discussions whenever possible; read a paper occasionally, or give a talk on something that you have studied extensively. I care not what the subject may be, so long as it tends to broaden your vision and to increase your ability. By doing so you can help yourself materially, give a helping hand to others, and win for your school a higher regard from business men.

In order to become a certified public accountant it is necessary that you take the State examination. Already 15 or more states have passed laws affecting accountancy and without doubt others will do likewise the present year. Candidates for this examination are required to have had actual experience as bookkeepers and at least two years in the practice of accountancy, also the usual high school education or its equivalent. Admission to state organizations such as the Michigan Association of Certified Public Accountants, can be obtained only after securing the C. P. A. certificate from the governor of the state. The same is true in all other states where such laws prevail. The requirements for admission are so strenuous, however, that it is almost impossible for commercial school men to gain admission; indeed it is next to impossible to gain admission to the examinations without having had the required amount of practical experience. Do not be discouraged, however, if at first you do not succeed, because I believe that by patience, perseverance and faithful study the end may be gained and recognition secured.

In conclusion, let me say that if all the commercial teachers and commercial school men will do their best to maintain a high standard, there is no doubt that our profession will receive the recognition which it so justly

deserves. Let us gain the respect of accountants and business men by doing good work, and let us prepare to give accountancy instruction because I fully believe that it has its place in the modern business school.

CULTURAL VALUE OF COMMERCIAL SUBJECTS

MR. A. H. HOLMES, GRAND RAPIDS.

Opinions are largely the result of environment and occupation. If we who are commercial teachers had been teaching Latin, Greek, or mathematics for a long series of years, we should doubtless put a low estimate on the cultural value of such subjects as bookkeeping, commercial law, and high school economics. On the other hand, if those whose business it has been to teach the classics or mathematics had been teachers of commercial subjects, it is but fair to infer that they would not look on any of those subjects as purely utilitarian in the narrow sense of the term. Bookkeeping, for example, is an excellent aid in the development of carefulness, accuracy, system, concentration of attention, and logical thinking. These are indispensable to success in almost any line of occupation, and to that supreme success, the building of right character.

There is no distinct line of demarkation between the cultural value of commercial and other subjects. It is evident that different subjects promote different phases of culture; but why put pure mathematics on one side of a cultural line, and bookkeeping on the other?

Another subject that has received much unmerited criticism is high school economics; yet, for its cultural value alone, it should be studied by everyone who desires to become intelligent in matters of public concern. No subject is better calculated to develop sound judgment, to connect the pupil with life outside the school and the home, and to make the well-informed citizen than this much talked against subject of economics. The high school pupil may not be able to enter deeply into abstruse and disputed theories; but outside of these, there is ample subject matter to occupy the time that can be given to economics in a high school course.

Commercial law commends itself at once for its aid in training the memory, and in developing the reasoning powers, as well as for its more definite practical value in business affairs.

In commercial courses, industrial history is taking its place. A good text on this subject may readily court comparison in cultural value with any equal amount of political history that may be offered.

Commercial subjects should be considered on the ground of what they do. Tradition has done much to hinder progress, and not often enough do we question its authority.

ENTRANCE REQUIREMENTS FOR BUSINESS COLLEGES.

MISS GERTRUDE OREN HUNNICUTT, LANSING.

No change in the established order of things takes place until there is an awakening that leads to a desire for change. There are existing today some conditions that indicate the fact that Business Colleges should recognize the importance of a uniform system of entrance requirements and should agree upon a reasonable standard of such requirements.

In the study of another subject, pertaining to business education, I have had occasion to consult the later reports of the state superintendents of our states and territories. In only three of these reports has there been any mention of commercial education, or of business colleges, other than that necessitated by the statistical tables of schools and colleges.

The report of the Connecticut Board of Education contains this significant statement: "Employers, commenting upon the work of the elementary schools say, 'What we want, is a boy who can write plainly and quickly; who can spell; who can be trusted to turn out a decent letter; who can add with accuracy, and who has some gumption about his work. That is all we ask for and that is what we do not get.'" These are the qualifications expected in a boy of fourteen years of age who makes application for a clerkship. Why does this condition exist? It seems to me it is due to the fact that the majority of people follow the line of least resistance, and the teachers being unwilling to conceive of or assume the state of the child's mind, undertake to predigest its mental food. Instead of developing and strengthening the native ability; instead of encouraging the mind to send out its roots for nourishment, thus laying hold of truth for itself through its natural curiosity, the teachers are content to pack into the brain cells of their pupils their own knowledge. This is easier, perhaps, but it causes the undeveloped and immature mind to quietly withdraw into its shell, as it were, and wait for more predigested mental food, to be taken in doses of any size the instructor sees fit to give it. The pupil has too many crutches provided for its use, too much predigested food.

Mr. Booth, principal of a preparatory school in New Haven, Connecticut, comments in this manner: "The boy or girl who graduates from our public schools is a rarity—not one in ten can foot a column of figures correctly, or solve an elementary problem in percentage. Formal grammar has disappeared." The student is pushed from grade to grade with such force and urgency that unless his parents at home are able to assist him in comprehending these problems and questions, he is crushed beneath the onward rushing crowd. Without a clear conception of the principles of formal grammar, without a knowledge of the relation which the parts of a sentence bear to each other, correct punctuation is impossible; it matters not how well the rules have been learned, or how trippingly they flow from the tongue. There

must be developed the reasoning power in this study of grammar. The student must be able to separate sentences into their parts. He must understand what arrangement of the parts of the sentence is most conducive to the strength and beauty of the thought. He should be taught to rearrange, to readjust his own expressions, not so much the expressions of others, until he is conscious of this power to reduce or increase the strength of expression at will. Until this power is developed he cannot hope to be the most satisfactory amanuensis.

The report of the State Board of Education of Massachusetts for the year 1904-05 contains some interesting conclusions. Mr. J. W. McDonald, special agent of the board, made a close study of business and industrial instruction in the high schools of the state. He found that, in schools offering commercial work the last two years of the course, from one-eighth to one-half of the students choose commercial subjects. In those schools which offer these subjects through the entire four years from one-fourth to one-half, and more, choose commercial subjects. The disciplinary effect of these subjects under like conditions, according to his observation, may be grouped under four heads, viz.: First, the power of concentration and application is developed as in no other course, except physics and chemistry; training in judgment, and training in accuracy is noteworthy; general culture is obtained through this course to the same extent as in the other courses. Although it would be generally stated that general culture is affected least, yet the study and practice of shorthand may be made the means of aiding those who desire so to do to become cultured and thus prove of inestimable value. This is explained by the fact that no other subject requires the same degree of mental concentration, which is the foundation of mental growth and power of the highest order.

"In training in accuracy, it must be admitted that commercial subjects lead," says Mr. McDonald. The practice of paraphrasing is not discountenanced in the English work of our schools. Indeed it is used as a means of enlarging the vocabulary, and to cover up the fact that there is not thought power, but it is done at the expense of memory exactness. This twisting, and turning the thought, the expression, of others, rather than the development of thought-power is characteristic of much of the work that is done in English with the result that if you ask a student to take down an expression verbatim, it is a task almost impossible of accomplishment. Indeed, judging from the questions asked by pupils, it would seem there has been developed an inherent objection to recording the language of others. They invariably ask, if it is not sufficient "to transcribe so that it makes sense." Given a breadth of vision, more experience, and observation, and a knowledge of that which surrounds the pupil, this resort to paraphrasing the expressions of others is no longer necessary. The mind is eager to act for itself if given an opportunity.

The shorthand writer must overcome this tendency and change the

mental process in such a manner that he may be a verbatim reporter. In many instances this is more difficult than mastering the principles and method. The difficulties in the pathway of exactness discourages more students than anything else.

Bookkeeping is also exact in its demands. An inaccuracy of a few cents here and a few cents there will unbalance affairs and cause much trouble. There should be more training in exactness in the elementary schools than at present exists.

Why is there a cry for more capable office assistants? Why do we hear so much about the failures of business college students? Why has this question of entrance requirements arisen? A glance at the origin of many of these special schools will aid us in answering the first two, and an appreciation of present conditions will enable us to find the answer to the last.

About the middle of the last century a number of individuals who realized the need of a business education for those who expected to enter business life, instead of the learned professions, endeavored to find some means to aid these people. Therefore initiatory counting rooms, mechanical institutes to train accountants were opened. These rooms were soon filled and the ventures were evidently successful. The idea that "there was money in it" caused business education to be exploited. Unbusiness-like and unprincipled methods developed in advertising short courses and short cuts to guaranteed lucrative positions. There were no scholastic requirements. They were and are yet under the jurisdiction of no superior authority, so long as no statute was broken. All that was expected of a prospective was the ability to pay for his or her scholarship. It was of no consequence whether the work of the sixth grade or the high school had been completed. This practice has brought the name and cause of business education into disrepute to such an extent that those taking such a course speak of it in apologetical tone.

At this point I call your attention to a paragraph in the 1900 report of Mr. Hammond, as State Superintendent of Michigan. I find these words, "The term Business College is a much used term and applies to a class of schools existing in Michigan and other states. It is supposed to be the general name of an institution where stenography, bookkeeping, and kindred subjects are taught." He then says the object in calling special notice to this class of schools is "to mention the necessity of some rigid law which shall define the rights and powers of such an institution, and at the same time furnish some protection to the young people of the state against frauds and imposters."

The introduction of shorthand into business life has taken place in the last thirty years. In process of time, short courses were advertised; it was claimed that anyone could master shorthand, however meager the mental training or inactive the mind—its mastery was simply a matter of manual dexterity. As a result many "ne'er do weels," incompetents, were attracted

and, after being in school a short time, clamored for positions. And thus business schools have been criticized because of the lack of learning; because of the very poor foundation required and the illiteracy of the teachers. These conditions are responsible for the disrepute attaching to commercial education. On the other hand the higher schools have been criticized because of the unpractical character of their training. But with martyr-like perseverance the leaders have perceived the true situation; have determined to correct these conditions.

In these days business is becoming more and more a profession. The Law, Medicine, and the Ministry are now requiring a higher degree of mental acumen than was required thirty years ago.

The attitude of our colleges and universities toward entrance requirements has entirely changed in the last twenty-five years. The preparatory departments no longer exist. The grades and high schools are now compelled to do the work that the colleges did several years ago. These secondary schools, although they are not all that may be desired, will solve these problems successfully in time. It is a well known fact that many pupils in the public schools idle away their time, their energies, their opportunities under the mistaken idea that little or no mental training is required to go into business life. The open door to business is by way of the business college and after spending from three to six months in a business college, they will be placed in a position that will be the equivalent of a pension for life. It oftentimes means the expenditure of much time and great mental tribulation to the conscientious teacher to make it plain to such pupils that the pathway is not strewn with roses; that it means hard work, honest application, accompanied by the power to say no to everything that would call their attention from the task, to be successful in business, as in anything else.

The business college bears the same relation to business life that the medical college, dental college, the law school does to the life of a physician, dentist, or lawyer. The time was when these institutions admitted any man who applied for admission. Entrance requirements have become more rigid from time to time, and now the best schools admit only those who are graduates of colleges or universities of high standing.

In the past, when our country was undeveloped, its resources unlimited, new enterprises sprang up under necessity. Success then was largely the result of being on the ground first. It was not so much the result of brain power.

Conditions are changing. Gigantic enterprises have taken the place of the two or three men combinations. Mere brute force, and the advantages of position must be met by the trained intellect, and the special skill of the strong business mind, which are as much the result of mental development as the so-called learned professions.

With these changing conditions a new conception of education must take the place of the old idea of preparing for idle elegance. Mr. Hyde of

Bowdoin College, gives this new definition of education: "Education aims to fit for three things, to earn a living, to support the institutions of society, and to enjoy the products of art and civilization." The call is for better minds trained to their tasks. This call has become so great that our high schools and several of our universities, observing that many of the brightest students are entering business life instead of the professions, are offering courses of instruction preparatory to such activities. High schools are offering commercial courses from two to four years in length. In the state of Michigan alone there are between 30 and 40 high schools offering commercial subjects. On the other hand, many colleges and universities are offering courses in commercial subjects leading to the bachelor's degree. The following institutions offer commercial courses, including shorthand: University of Idaho, Louisiana State University, State University of Nevada, State University of New Mexico, New Mexico College of Agriculture and Mechanics Arts, University of North Dakota, Oklahoma Agricultural College, Oregon State Agricultural College, University of South Dakota, South Dakota School of Mines, University of Vermont, State College of Washington, West Virginia University, and the University of Wyoming.

The following universities offer commercial courses without shorthand. In July, 1898, Chicago University opened a College of Commerce and Politics, and in the same year similar Colleges of Commerce were opened in the Universities of California and Ohio. In 1900 Dartmouth College established the Amos Tuck School of Administration and Finance. The University of Vermont has a Department of Commerce and Economics. New York University has a School of Commerce, Accounts, and Finance. The University of Michigan offers special courses in Higher Commercial Education and Public Administration. The University of Wisconsin has a School of Commerce. The Universities of Illinois and Iowa have asked for such schools and it is expected these schools will open in the near future.

It would seem then, that the Business Colleges are between the "upper and the nether millstones." If they are to preserve themselves; if they are to maintain their position, we, as teachers, must awaken to the conditions which confront us and should endeavor to avoid the rocks of destruction, which are the enrollment of students with meager mental training, the so-called short courses, and the unwillingness to guide and direct the individual student when occasion requires.

Success is the aim of both public and private institutions, and while business colleges are responsible to no higher authority in the state than success, the law of success is as stringent as any we have. Mushroom institutions will spring up and have all the appearance of success for a time, but they cannot endure. Nevertheless these injure the honest institution. It is my belief that we are on the eve of a change in conditions that will cause this law of success to operate in such a way as to demand of business colleges higher entrance requirements, broader and more thorough courses, or

the installation of preparatory departments which will care for those whose education is not sufficiently advanced to permit them to take up the regular courses. Self preservation will also compel business colleges to enlarge and lengthen the course, thereby making it more thorough, more comprehensive, more enduring. If we would appreciate what remains to be done in business education in this country, it will be of interest to review the situation in Germany. The German people are noted for the thoroughness with which they undertake and complete a piece of work, whatever it may be. At the time of the Centennial Exposition it was discovered that the products of Germany fell far below the products of other countries. At once she began to lay plans to overcome her weakness, to take a higher place in such efforts, to come to the front in industrial affairs. In accordance with this determination, Germany has built up the most elaborate system of industrial schools to be found. In these schools, the business men and consuls of the country are trained. They learn to speak other languages, they understand fully the trade customs of other countries. The formal school of commerce is a special feature of public instruction which no doubt explains the wonderful advance Germany has made in trade control.

The reason that Japan has become a formidable trade competitor in the last few years is due to the fact that for a number of years her young people have been sent by the government to other countries to study in the technical schools, in the factories, and various industries all there is to be learned about foreign production, foreign commerce, foreign methods of doing business.

The educational germ is in the atmosphere as indicated by certain activities in the industrial centers. In New York City, the Y. M. C. A. gives a course in House Furnishing and Decorating. Real Estate men have established a Real Estate school. A school has recently been organized which gives instruction in all forms of bonds, stocks, and securities, known as the "School of Wall Street Investing."

The Young Men's Christian Associations in the large cities are giving courses in the study of many lines of business. The teachers are the trade and industrial leaders of the city. Do they not foreshadow the Vocational University, which is the dream of Mr. Vanderlip, the New York banker? In the East there has already been organized a Society for the Promotion of Industrial Education. This may develop into the Industrial University. In the state of New York, the University offers a State Business Diploma as an encouragement to business education. These diplomas are granted to high school graduates after spending a year in a registered business school and after passing the examinations of the University. A State Stenographer's Diploma is granted to graduates of the high schools that pass the 125-word test in shorthand and the tests in business English, and typewriting.

The University registers those institutions possessing the equipment

and teaching force necessary to maintain courses for state diplomas. And now New York City has the first public high school for training boys in business pursuits, costing one million dollars—the Commercial High School.

A few years ago, Mr. John H. Converse of the Baldwin Locomotive Works said: "I consider it eminently desirable that there should be a commercial high school or a commercial course in the existing high school. Experience will show which is better. There should be, I think, in connection with our secondary schools a commercial course which should be optional, but not obligatory. I would go farther and say there should be in our universities a commercial course as an elective or supplementary to the regular course." Almost in direct answer to this expressed desire of Mr. Converse we find Simmons College, Boston, open for instruction in October, 1902, however, a women's college. Among the schools of this college is the School of Secretarial Studies with a four years course. To quote from the catalog: "It has been deemed inadvisable, ordinarily, to admit any student who is neither a college graduate, nor a candidate for a degree, to the courses in shorthand and typewriting; since experience has shown that a general academic training should supplement the technical study in preparation for secretarial duties."

A one-year course is offered to graduates of other colleges—not high schools. The course for non-graduates is a four-year course. Shorthand is studied throughout the last three years. Typewriting through the four years. In the fourth year accounts, business methods, commercial law, ethics, and social science are the subjects studied.

The entrance requirements are surprising. The candidate is examined only at the college, and must be able to write shorthand at the rate of 90 words per minute for a period of at least five minutes from dictation, other than correspondence, and to transcribe the notes with reasonable accuracy, and speed.

Two modern languages, history, hygiene, physics, and economics are the remaining subjects in the college course.

Superintendent Maxwell sounded the key tone of the situation when he said, "I cannot refrain from expressing the hope that the University of Columbia, whose distinguished president is a member of the New York Chamber of Commerce, will at no distant day establish, side by side with its School of Arts, side by side with its School of Applied Sciences, a great commercial school that will open its doors to those who have completed a secondary education."

Foreign countries, like Belgium, are raising their business colleges, or business institutes, to the rank of a university.

In the period from 1893 to 1902 the students taking the commercial course in the high schools increased five fold. The increase in business colleges for the same period was four fold.

Investigation has shown that one-third of the graduates of Yale enter purely commercial lines of activity.

In the year 1900 there were enrolled in the business colleges of the country 190,000 students. Between one and two percent of the men of the country are engaged in the so-called learned professions. Business pursuits absorb the remaining portion.

Very briefly have I sketched some of the currents and tendencies in commercial education. We must recognize the fact that given a student who has had thorough training in the branches taught in the high school, together with the age which means a degree of mental maturity, that student will accomplish more. Eighty per cent of the students entering business colleges need a thorough training in English and elementary subjects. The introduction of commercial courses in our high schools and universities will mean that business colleges to compete with them must make their courses more thorough, longer; must intensify the instruction so that having completed the commercial course of the high school, and being unable to continue in the school of commerce of the university, the student will enter the business college and there receive a training that will concentrate the first five years of business life, under the old plan, into 18 months in the business college. This will enable the student to acquire not only a knowledge of the rudiments of bookkeeping and other commercial subjects, but also a knowledge of shorthand that will be equal to the most ordinary correspondence, and a skill necessary to perform business transactions in such a manner as to avoid the mistakes and errors usually committed by the average untrained man during his first five years of business life, and in a better manner than the pupil entering from the sixth, seventh, or eighth grades.

If the business colleges are to wipe out entirely the stigma that has been fastened upon them because of the practices of irresponsible institutions it should be agreed that only those students will be admitted who hold a diploma from a recognized high school, or who pass a rigid examination in English, mathematics, history and reading. This can be done by united effort and will be done when we see that our occupation is slipping away, unless we are heedless of existing currents. When this is done the mental caliber of our product will be improved. Stenographers will not be discharged for transcribing the notes for such a sentence as "He is a thinker," to read "He is a thin cur," as has been the experience with some of our product.

With reasonable entrance requirements or required preparatory courses; with longer and broader commercial courses, with higher ideals, with a state law requiring every business college to meet certain conditions and incorporate, with a department of commercial education as a part of the state supervising power, business colleges will demonstrate their fitness to continue as a part of the educational system of the country. Our graduates and our pupils will be an honored and respected class.

THE DEVELOPMENT OF CHARACTER

MR. ARTHUR H. HOLMES, GRAND RAPIDS.

"We live no more of life here than we live well."—Carlyle.

Much of life is wasted because we do not know how to live; and though our efforts lead but slowly to knowledge, we should strive to know life, its purpose, and its possibilities.

Inquiry as to the source of life ends in mystery. If we find that it is the infinite power that governs all, that lives in all, we still ask as to the source of that source, and have no answer. Yet life is, and we are in its midst. Browning says:

"Life is probation, and the earth no goal,
But starting-point of man."

Geothe calls it "the quarry out of which we are to mold and chisel and complete a character."

Thought finds expression in action. Some by their living express the belief that the purpose of life is the attainment of pleasure. Innocent pleasure, however, does not long retain its attraction for them, and they seek other, and, finally, extreme, vicious, and destructive forms of stimulation. The pleasure theory in regard to life is refuted by the results of its application.

We consider the deeds of another class, of men who have abundance to supply their present and future needs, but who, notwithstanding, devote their best energies to the amassing of great wealth. We note the extremists of this class; we study their methods, their character, and conclude that the heaping of wealth upon wealth is not the true purpose of existence.

We direct our attention to another class, those who earn their living with their hands. Frequently among them we see the evidences of a kind of defeat, of the lack of fulfillment of early promise, of the lack of hope, of the lack of growth and of the elements of growth. From this we must conclude that labor in itself is not the real purpose of life.

We have looked upon a broad range of human activity, and have not found it motived by the true purpose of life. Phillips Brooks says that "we are haunted by an ideal life, and that it is because we have within us its beginning and its possibility." If a plant springs from the earth and has proper care, we expect from it growth and right development. Should we expect less from human life? We turn to still another class, to those who, whatever their sphere of activity, continually grow in service to others and to themselves; who so long as their powers are unimpaired, make use of life to build the only thing that will endure,—right character. When we look upon them as they increasingly realize the infinite within them, must we not say that theirs is the true purpose of life, the development of right character.

This leads us to the questions, What is character? How should it be developed? For light on the first of these we turn to Emerson. "Character," he says in a way peculiarly his own, "is the habit of action from the permanent vision of truth." More inclusive and psychological are the definitions of Novalis: "Character is perfectly educated will," and that of James Allen in line with the new psychology, "A man is literally what he thinks, his character being the complete sum of all his thoughts." It has been well said that "the character of the citizen is the supreme end for which all polities exist"; and most of us, I think, will agree with the words of Henry Ward Beecher, that "A man's true estate of power and riches, is to be in himself; not in his dwelling, or position, or external relations, but in his own essential character."

Character is so closely allied to habit that we can say that both result from the frequent repetition of the same psychological states. Yet habit appears to precede in order of formation, and, in general, to have less of permanency than character. Habits are many; character is one. Character is the sum total of habits. Here, however, we are not so much concerned with the relation that exists between habits and character as with the ways in which they may be developed.

Dr. John Mac Cunn, an English writer, expresses the truth underlying development when he says that "feelings and desires feed upon their own expression"; that "the soul like the body grows to the modes in which it is exercised." Emerson voices the same idea in the words, "Do what you know, and perception is converted into character." Essential repetition of actions is emphasized by William James: "The tendency to act only becomes effectively ingrained in us in proportion to the uninterrupted frequency with which the actions actually occur, and the 'brain' grows to their use." Another psychologist, Halleck, expresses the same thought: "Action is the key-note of habit and character. If a habit in a given direction is desired, act in that direction."

In considering the question of how character is to be developed, our attention as instructors may be given principally to the means and methods by which we may help in the character-building of our pupils. First, however, I wish to present to you some of the results obtained from answers to certain questions recently submitted to a considerable number of pupils. I wanted to know more about their mental attitude toward life; and though their answers cannot be taken too seriously, they do, I think, throw some light on an important phase of education. Many pupils in the lowest grade of the high school gave written and signed answers to the following: What is the purpose of life? How is the purpose of life to be fulfilled? It was but natural to expect that many of the answers would be crude, and some of them amusing; yet the feeling that remains with me from reading what was written by those pupils is that there is limitless pathos in their lack of knowledge of what is essential to the development of right character. The overwhelming burden of their expressed belief is that the purpose

of life is to attend to the welfare of others. In their minds, the "do unto others" side of the golden rule is emphasized to such an extent that the other and equally important side, "as ye would that others should do unto you," is wholly forgotten. "Do good to others" sums up their vague idea of altruism, and their idea of good does not include the duty of the true altruist to bear in mind the duties of others. The relations of men are reciprocal, and the golden rule means not only that everyone should do his part, but also that he should receive his share. That is not selfishness; on the contrary, it is the broadest altruism. The self must even be given precedence in order of service; we must receive before we can give. The true self grows by expression of good received, and this expression includes service that is for the welfare of others. The development of self is fundamental; it is an end in itself, and a means to the service of others; yet these ideas find but scant expression in the answers of those whose present business it is to prepare for the duties of life.

We act on what we believe, not on what we think that we ought to believe, nor necessarily on what we have persuaded ourselves that we do believe. One-sided altruism, if we can conceive of such a thing, is too remote from the life of the ordinary boy and girl to serve as a basic motive for present action. Do children act as though the primary motive of their lives is to devote themselves with self-abnegation to the service of others? We may be glad that the teaching of ages has not resulted in anything so unnatural.

As we come to the discussion of means and methods by which we may assist in the development of the character of those who are in our charge, we can not pass by ourselves without consideration. If we are not a means of development, we are obstructions, and worse than nothing. To get an unbiased opinion about ourselves, let us turn to an apparently fair-minded outsider. In "Educational Aims and Methods," Sir Joshua Fitch expresses himself thus: "The school is influenced not only by what he [the teacher] says and does, but by what he is, by his tastes, his preferences, his bearing, his courtesy, the breadth of his sympathy, the largeness and fullness of his life. . . . So his first duty is to cultivate himself, before he can hope to cultivate others and bring out what is best and worthiest in them." The opinion includes much, and its emphasis is well placed. With us, as with our pupils, the development of self is a matter of fundamental importance. Have we not been too content to stop at some certain point in our development, and to devote our energies to a narrow line of assistance to our pupils? Have we not almost ceased to grow in the effort to promote the growth of others? Have we not failed to realize the great truth that the growth of others is immediately dependent upon the growth of ourselves? We are preparing our pupils for the activities of life; to do that well, we must know life, and that we can not do by confining ourselves to the narrow walls of the school room, and to the small range of subjects in which we are called upon to give instruction. To get life into us, we must get out

into life. This side of completeness, there should be no stopping-point in our development.

The beginning of development is a knowledge of what needs to be developed. Ask your pupils to tell you frankly what are their motives in going to school. Ask them what they think is the purpose of existence. Ask them what good they expect to gain by the study of any subject upon which they are entering. Ask them such things, and do not take too much for granted. Thus you may reach your point of departure, and be ready to go with your pupils along the right way.

In order that their everyday activity be properly motived, our pupils need definite, practical ideas that they can put to immediate application. These must be put before them in a way to arouse interest and desire, and to satisfy reason. It is not enough, for example, to tell our pupils to concentrate attention, not even if we explain to them the advantages of concentration. To this must be added definite instructions as to the way in which concentration of attention is to be attained. It is a part of our province to teach the process of habit formation. To do this we shall need to do what we can to arouse in our pupils a strong desire to act in the right direction, to urge them to frequent and continued repetition of the action, and to insist on the least possible deviation until the habit is firmly fixed. We have all learned that it is a long step from conformance to law to becoming a law to ourselves. So long as it requires conscious effort on our part to do what we know we should do, we may be sure that our character along that line is not yet complete.

Habits should become our friends and assistants; we should make them so reliable that they do not need direct supervision; in so doing, we may continually enlarge the field of our conscious effort.

Among the means of education, I think that we hear less of discipline now than in earlier days. It is, at least, pleasant to think that the relations between pupils and teachers are becoming less antagonistic than they were in days gone by, that the teacher is more approachable than the schoolmaster of old, and that his pupils are better largely because he himself is better. To succeed in persuading our pupils to develop their character, we must have their confidence and good will. To gain these, it is necessary to sacrifice neither dignity nor good order. Rules and regulations there must be; but the rigor of them may be greatly softened if in their promulgation they are accompanied by the reasons for their existence.

A review of my schooldays leads me to ask why I was not told what to expect from my various studies. What some of them were for, I did not know, and in a few cases, I don't know yet. Interest and effort are quickened by the hope of definite good to be obtained. In starting a class in bookkeeping, for example, we may well afford to take the time necessary to enlarge upon the virtues of neatness, carefulness, accuracy, system, dispatch, logical thinking, and the power of concentration, as well as the ability to keep books, or to give intelligent oversight to the bookkeeping work of

others. To a great extent, the expected happens; and our pupils should know what good things they may expect to gain from any study upon which they are entering.

As an aid to development in general, may I suggest a few subjects for short talks to pupils. Motives for Obtaining an Education, The Purpose of Life, Mental Attitude, The Formation of Habits, The Purpose of the Subject upon which they are Entering, Concentration of Attention, Self-Control, Right Thinking, Judgment, Doing Things Right the First Time, Success, Vocation, Character, Truth, Courage, Honesty, Independence, Altruism, Courtesy, Diligence, Persistence, Thoroughness, and so forth.

I trust that nothing that has been said will be construed as a depreciation of right ideals. They are indispensable, and should be kept constantly in view. It is the ideal that is the true measure of the real. What I desire to emphasize is that ideals can be approached in no way except through ideas; that right ideas should be made definite and practicable in the minds of our pupils; and that we should induce our pupils to put their ideas to immediate and continuous use.

A little less attention to books, and more to the development of character, and the result will be more and better knowledge, and far more of the best fruit of knowledge,—right character.

SHOULD THE UNIVERSITY PLACE COMMERCIAL SUBJECTS UPON THE LIST OF ELECTIVES FROM WHICH EN- TRANCE CREDITS MAY BE CHOSEN?

MR. DURAND W. SPRINGER, DETROIT.

The wisdom of introducing commercial subjects as a part of the curriculum of secondary schools has never been questioned by those who are acquainted with the results. They have been attractive to a large number who otherwise would never have entered the high school and have retained many students for a longer period than was anticipated, owing to the interest awakened as a result of their utilitarian value, if you please, but in the pursuit of such subjects, even though for utilitarian purposes, the horizon of the student was broadened, his ideas enlarged, his mental powers strengthened and a general culture received which to him was as genuine as comes to many another in pursuing studies having no practical value.

After these subjects had become well established in the high schools, colleges and universities undertook, in response to what they considered a well defined demand, to furnish what are generally called Higher Commercial Courses.

For some time immediately following their introduction, college men

offering such courses were undecided as to the advisability of permitting entrance credits for commercial work. Ten years ago Dr. Adams was opposed to the idea. Now he has no settled conviction in the matter, while Professor Taylor favors some recognition of high school work. Professors of political economy were apt to believe that the subject was one whose elementary principles could not be understood by pupils of high school age. This idea has disappeared in the last decade, so that now the better teachers of political economy are willing to admit that their work would be furthered if the students coming to them had taken an elementary course in that subject. With the introduction of courses in book-keeping or accounting, it has been found that much time is seemingly wasted in work which more properly should have been done in the high school and yet, until some measure of credit is given those who enter the University for commercial work pursued in the high school, it will remain true that from 80 to 90% of those electing such courses will be obliged to take in college the elementary work which they might have done before entering.

Were such credits allowed, the University would be permitted to begin work along commercial lines at the corresponding point at which they are enabled to begin work in the languages, science and history. Such courses would be truly Higher Commercial Courses rather than Secondary Commercial Courses as some must needs be under present conditions.

From the beginning, colleges and universities have objected to the commercial work in secondary schools from two standpoints, (1) The content and educational value of the courses offered and (2) The equipment and preparation of the teachers. Minor objections have been raised none of which, however, enter largely into the problem before us. When universities established courses in commerce, the elementary ones of which traversed the same ground as did corresponding courses in the secondary schools, they admitted the educational value of the courses offered, leaving as the only point of controversy, the preparation and equipment of the teachers.

It is no longer necessary to defend commercial courses so far as the educational value of their subject matter is concerned. All of the subjects named in the question before us are taught in some State University and credit therefor given towards graduation. Not all are offered in the course of any single institution with a national reputation, so far as I know. The University of Michigan has set its seal of approval on all except shorthand by offering courses in connection with their higher commercial work. The question might naturally be asked, is any institution consistent when it offers courses, credit in which is allowed for graduation and yet refuses to allow entrance credit for courses of the same content when pursued in institutions of secondary grade?

Michigan offers elementary courses in commercial law, economics, book-keeping, and commercial geography.

When the question which we have under consideration this morning was suggested, I addressed a postal card request to the superintendents and principals in the cities whose high schools are upon the accredited list of the University, asking their answers to the same without indicating the purpose for which they were desired.

In reporting to you the summary of the replies received, please bear in mind that these men are not commercially trained men, that the large majority are graduates of the University and that upon them rests the responsibility of keeping the schools over which they preside up to a standard which will be satisfactory to the University of Michigan. They are the men who are more familiar with what has been accomplished in the high school through the introduction of commercial courses and are better able to judge concerning the present status of the work than are either university professors or commercial teachers.

Replies were received from sixty-six out of ninety-one requests made. Of these, thirty answered the question in the affirmative without any qualifications. Four answered in the negative and thirty-two gave qualified answers. Of these qualified answers, twelve objected to one or more subjects in the list, one voting against commercial geography, one against political economy, two against commercial law, nine against book-keeping, and eleven against shorthand. Four answered that they favored the list in part but did not indicate what part. Five favored the placing of the subjects on the list with restrictions as to the number of such units which might be offered or the conditions under which such electives should be presented. Nine answered in the affirmative, adding, "when properly taught by competent teachers," while two answered "no" because the subjects would not be properly taught, one of whom added, "I teach book-keeping."

The following quotations from some of the qualified answers indicate the ideas in the minds of these superintendents and principals with regard to the problem in hand.

"I think Political Economy, Commercial Geography, Commercial Law and History of Industry might be made college entrance subjects because of the connection more or less close between them and certain courses in college or university. Book-keeping as leading to advanced accounting might also have a place. I cannot say so much for Shorthand." "In my judgment the University should give credit for commercial subjects completed in the high school for entrance to like courses in the university."

Another suggestion was, "I believe in their accepting four years of high school work while we settle what the student shall take and then put him on his metal." Somewhat along the same line is a reply reading, "I believe that all subjects taught in the high school should, upon a basis agreed upon, be accepted for entrance into the university which is supported by an income derived from the people."

As to limiting the courses offered, the suggestions were: "Of course, it would be necessary to work out the details in regard to these and to place certain restrictions regarding Book-keeping and Shorthand." "I believe that it would be well to allow a student to offer two or three units from the list as given." Others suggested that half credit be given for book-keeping on the same basis as credit for laboratory work.

Remarks concerning the educational value of these subjects were: "The concentrated attention necessary in Shorthand deserves full recognition." "I am not sufficiently familiar with Shorthand to know what it does for the student beyond increasing his power to earn a livelihood." "These studies are truly educative in my opinion and the time has come for their full recognition." "Commercial branches when properly taught give as good mental training as other high school branches, and in my opinion should be given credit for college entrance." "I believe strongly in all subjects being put on the same basis of recognition and am ready to work for equal recognition for business and classical studies. Our stenography is just as valuable as is Latin as a preparation for college for it is taught as well as is Latin and contains within itself the disciplinary value of Latin." "They have educational as well as practical value."

The comments on the teacher and methods read as follows:

"I am inclined to think that the university not only should but will place the subjects you name on the list of electives as soon as they are widely taught by competent teachers." "In my opinion these subjects as taught in our high school should be credited. Of course care should be exercised in the manner of teaching the subjects." "Yes, when taught by teachers with four years' college training." "Your questions are relative ones, yes and no being my answer according to the good or poor equipment of the teacher handling the subject."

One who objected to political economy and commercial law, added, "The only reason, I do not include them is because the average high school would put the subjects into the hands of incompetent teachers."

One who gave a negative answer in the following language, "I say No emphatically because in the average high school these subjects are taught as filling or padding subjects and by teachers with no special preparation for that work," added, "If a school has special teachers and special equipment for such work, all right, but few have."

Another has in mind the difficulty of arranging the details, for he writes, "I would answer your question in the affirmative realizing, however, that in giving credit for the subjects mentioned, the University would be "up against" a difficult problem in securing the proper standard for such comparatively new subjects." While another, less mindful of the annoyance which might be caused the university authorities than of the good which might come to the youth of the state, said, "I hope that the time will come when the boys or girls who entered the commercial course in good faith but

who find during the eleventh or twelfth grades that they can and desire to go on with an education may do so."

For some time there has been a growing feeling among the commercial teachers that the university should place commercial subjects upon the list of electives from which entrance credits might be chosen. It would seem evident from the replies received that the class room work of the commercial teachers in Michigan, judged by the men who have had the best opportunity of watching the same, has not been of as mean a degree as some would have us believe.

In a discussion of this question it must be borne in mind that commercial courses existed in the secondary schools prior to their introduction into colleges and universities. The men who were pioneers in this field of secondary education were not permitted to receive as specific a training in the subjects which they undertook to teach as are those who come from the colleges and universities of today, having had the advantages of economic and commercial courses now offered in these institutions. If the men and women have succeeded in establishing commercial work in the secondary school upon even the plane which it now occupies without such training, ought not the future to look bright to the believer in commercial education?

The qualification placed upon affirmative answers received, that these subjects should only be placed upon the list when properly taught and the charge often made that the reason they should not be placed upon such a list is because they are improperly taught would indicate to my mind that the University has a responsibility in this matter which it can not overlook. Were these subjects placed on such a list the university authorities would have the same control concerning the equipment of the school and preparation of the teachers presenting them that it now exercises over the high schools of the state concerning the subjects which are recognized as electives for admission to college. Such control is a powerful incentive to good work. Not only would commercial education be dignified but the commercial teacher would be placed in a position where he must make good or retire. It is evident from the replies that the superintendents and principals are willing to assume the responsibilities for such action and stand or fall by the results.

It cannot be urged that the task of selection would be arduous, for the business of the University is to do the thing which would be the most beneficial to the educational interests of the state. If such control would raise the standard of efficiency among the commercial teachers in the high schools of the state, Michigan has the right to demand of the University that it assume such responsibility.

While in a general way I was acquainted with the commercial teachers of the state, I felt that in the discussion of this question it would be well to learn, if possible, some facts from them and accordingly sent a request for answers to the following questions:

First: What schools did you attend after leaving the high school?

Second: If a graduate from such schools, what was the year of graduation and degree?

Third: Have you had any practical business experience? If so, for what length of time and what was its general character?

Fourth: What courses were offered at the schools you attended which especially fitted you for teaching commercial work?

Fifth: How many years' experience have you had in teaching commercial branches?

Twenty-eight replies were received with the following results:

Twenty-two had attended either a state normal, a degree conferring college or the University, nine having been students at two or more such institutions of learning. All but two of the twenty-eight had attended some private business college, giving as their reason the necessity of going where courses were offered which they could pursue to fit them for their work as commercial teachers. One wrote, "I went where the courses I wanted were offered. I was after the goods instead of the degree."

The replies to question four would indicate that the higher institutions of learning were now offering courses which were valuable to the prospective commercial teacher, but the same could not have been said ten years ago.

Of the twenty-two, sixteen had graduated from institutions attended, twelve receiving the degree of B.S. or A.B. Nine had had practical business experience, varying in length from one year to twenty-two.

If in no secondary school, proper instruction in such courses is offered, the University is justified in refusing to place such subjects on the list of electives. The only way the University can tell as to whether these subjects are properly presented in secondary schools is by permitting students who have pursued them to take an examination given by university authorities for the purpose of demonstrating the character of the work done. To waive aside with the mere say so the claim of those actually engaged in secondary school work and not permit a demonstration of its truth or falsity would be a species of arbitrary action which is hardly justifiable in an institution supported by public funds. The University has the right to safeguard itself by proper restrictions but it has not the right to place such prohibitions concerning entrance as will prevent an individual from demonstrating by any fair test required his ability to pursue the work given in the University.

Then again, notice that the self interest which governs the action of superintendent and principal, when it comes to recommending students, will act as an incentive to the exercising of very careful discrimination where granted. No high school man would care to risk his reputation by sending ill prepared commercial students to the University, knowing that they would be conned out on the least plausible excuse and by their system

of office checks all such cases are charged to the school and are taken into consideration whenever the time for which the school has been placed upon the accredited list expires and a renewal is desired.

Personally, I do not believe the University is going to refuse any reasonable request in this matter. "Knock and it shall be opened unto you" is the Scriptural injunction. So far no great amount of knocking has been done and one can hardly expect those in authority to go out of their way to find new problems upon which a decision must be reached. Courts sit on cases when presented to them, they don't go out and drum up trade. As I understand it, no formal request has ever yet gone to the Senate asking for such recognition. What talk there has been on the subject has been desultory. I trust that we may, as a result of this discussion, inaugurate a movement which shall result in a limited recognition for commercial subjects as proper entrance electives.

At the present time fifteen units are required for admission whether such admission is secured as a result of an examination or by means of a recommendation from a school on the accredited list. Of these fifteen units, nine are required, namely: three in English, three in mathematics, two in a foreign language and one in physics. The other six may be offered from a range of subjects including three foreign languages, three years of history, chemistry, botany, zoölogy, biology, physiology or trigonometry. The list of electives has been changed from time to time, four changes having been made in the last four years, showing that the University admits that changes are taking place in secondary schools which make it possible for subjects which at one time were not considered of sufficient importance to be placed upon the list to earn their right to such recognition.

Formerly schools were accredited for some courses and not for others, but now for all courses alike. In listing schools, the University is the sole judge as to whether the equipment and teaching force is of such a grade as will warrant them in permitting students to enter without examination. Whenever any school meets the requirements imposed by the University that school is placed upon the list. Good work is the thing that is required by the University. The good school is the criterion by which all rules must be made rather than the poor school. Poor work does not enter into the controversy. In disposing of this question the University must take into consideration the work done by the good school and not that done by the poor school. It can so safeguard itself as not to be imposed upon. If a single school is doing work of a grade to warrant it, that school is entitled to recognition.

In 1908 the commission on accredited schools and colleges of the North Central Association of Colleges and Secondary Schools made a report which was duly published, in which they defined the unit courses of study in secondary schools. These definitions were given under the several heads of English, Mathematics, History, Latin and Greek, German, French and Spanish,

Physics, Chemistry, Physical Geography, Botany, Zoölogy, Commercial and Manual Training. The committee reporting on the commercial subjects had as its chairman, Professor E. V. Robinson, Professor of Economics and Politics in the University of Minnesota, and representatives from the University of Cincinnati, University of Illinois, University of Iowa, University of Missouri, State Agricultural College of Colorado, in addition to six representatives from secondary schools. In that report they defined units in the following commercial subjects: Business arithmetic, one-half unit; book-keeping, one unit; business law, one-half unit; stenography, and type-writing, two units; business spelling and correspondence, one-half unit; history of commerce, one-half unit; economic history of England, one-half unit; economic history of the United States, one-half unit; materials of commerce, one-half unit; commercial geography, one-half unit; and elementary economics, one-half unit. These are suggestions as to standards which shall be the basis when credits are allowed. Already many of the higher institutions have placed some or all of the subjects named on the list of electives. Let us hope that the time is soon at hand when Michigan will do so.

BUSINESS ETHICS AS EXEMPLIFIED BY TEACHERS AND PROPRIETORS.

HON. JASON E. HAMMOND, LANSING.

The subject assigned me by the Secretary of your commercial section was, "Business Ethics as Exemplified by Teachers and Proprietors." I understood that I was to address a meeting of commercial teachers composed of business college men and women and also teachers of commercial subjects in the public schools of the state.

It may not be quite clear as to what is meant by business ethics as applied to business teachers and it is not clear in my mind that there is any code of ethics among business teachers that does not apply to teachers in all branches and conditions. What I shall say, therefore, on the subject will not necessarily apply only to those who are engaged in teaching commercial branches, but will apply, with more or less significance, to all teachers and proprietors of schools, regardless of the branches they teach and the professions they make.

The organization of business colleges and the standard of business and social ethics that prevails has been undergoing a change during the last few years and I believe this change is for the better. I shall not endeavor to suggest any code of morals or of conduct of persons who are not worthy to be classed as reputable proprietors of business colleges or teachers who are teaching in schools that are not worthy the name. It would be idle for me to

endeavor to point out the proper conduct for persons who, being engaged in commercial teaching, do not attend meetings of this kind, who are not in sympathy with your plans and who are not in a position to realize, appreciate or understand the efforts that are being made to dignify their calling.

In the first place, no commercial college or school should be permitted to exist that is not properly incorporated under a state law. Such schools should be capitalized at not less than \$20,000 with at least \$10,000 capital actually paid in and available for the uses of the corporation. No institution should be permitted to call itself a business college or university, or even a normal school of business methods, that is not subject to official supervision and inspection. The namby pamby aesthetic fellow who calls himself a professor and who has no capital except, possibly, the ability to write a good hand and advertise himself in fakir fashion, is not the person for whom any advice is intended, or to whom any effective advice can be given.

A man to be a proprietor of a business college should, in the first place, be a man of scholarship, a man of integrity and a man whose advertising means what it says. Too many schools have been organized and conducted by men of very inferior scholarship and superficial training who have no more business as the proprietor of a business college than the silly, simpering girl has to be the proprietor of a millinery store, simply because she wears a stylish bonnet and looks pretty. I take it that there is no difference of opinion on questions of this kind and that there is a unanimous feeling among those present that there should be a higher standard maintained among proprietors of business schools and the teachers employed in such schools.

Some standard should be fixed whereby it shall be known what constitutes the course of study in a business college and if, perchance, the institutions thus organized desire to give lessons in Spelling, Orthography, English and the elements of Arithmetic, such a course should be designated and understood as a preparatory course instead of being known as a part of the course in a commercial school.

Too many young people, failing to pass from the seventh into the eighth grade, or from the eighth grade into the high school, are made to believe by unworthy proprietors of business schools that it is of no use to continue their education further in the public schools and that by giving from six to ten months in a business college they are graduated and made to believe that they are fitted to compete in business offices and in class rooms with those who have given three or four years to their high school course and are thoroughly prepared, by reason of training and ability, to go into the offices of a professional or business man and comprehend his instructions and dictation and perform the work intelligently.

No circumstance should arise whereby a man or a set of men—proprietors of a business school—shall guarantee employment to any and all persons who finish a course in their institution. It is well to state that proprietors will use their best efforts to procure suitable employment to all persons who

study in their schools. Here is a place where a proprietor of a school should have sense and honesty enough to have in mind the proper employment for immature girls who have only had the advantages of the eight grades of the common school as compared with a mature, business-like young woman who is a graduate of the public schools and who has spent time enough in the business college to thoroughly master business Arithmetic, business English, Stenography, Bookkeeping and kindred subjects.

In other words his recommendations to merchants, lawyers and professional men generally should state the specific information he has of the individual for whom he desires to secure the position. He should be more desirous of telling his pupils exactly what he believes their abilities are than to please them for the purpose of securing their friends as students in the institution and, after collecting their tuition, dispose of them as quickly as possible that the room they occupy in the institution at type-machines and in class rooms may be vacated for others whose tuition has not yet been paid into the treasury of the institution.

Proprietors should exercise as much care in the employment of teachers in their schools as does the conscientious superintendent of schools in the city system when he employs his teachers who shall teach Mathematics, Sciences or Manual Training. No teacher should be employed in a business school who is not as thoroughly equipped in general scholarship as the teacher who is employed to teach Mathematics or Sciences in the public school.

I have observed in my travels, first officially and later in a business capacity, persons teaching classes in Shorthand and Arithmetic who are themselves ungrammatical, unrefined and better fitted for the kitchen or the factory than for a place in an educational institution. Many students in commercial schools come from humble homes and need encouragement. They should be given value received for their money and, better still, they should have before them ideal teachers in whom they have confidence and to whom in later years they can go for consultation. It too often occurs that students go out from business schools and learn, to their disappointment, that the persons to whom they looked as educated people and persons of high ideals have not only been dishonest with them, but are incapable of maintaining any standard of scholarship or proficiency.

It is not my intention in this discussion to state what I consider shall be the standard of scholarship in a business institution. It is, to my mind, sufficient guarantee to the public that, if the state requires private institutions to be suitably incorporated with sufficient capital to give the institution standing and character in the community, that the proprietors of such schools will themselves have standing and character enough to determine the standing that shall be maintained in the school.

Teachers in the public schools are required to pass examinations and hold certificates qualifying them to teach, and the work of commercial departments should be in the hands of well trained teachers of scholarship and certification

that shall be as high as that of any teachers of similar rank. In the laws of this and adjoining states public interests are safe-guarded to such an extent that this criticism applies mainly to those employed to teach in private institutions and not those under state supervision and control.

Several years ago when I appointed a number of prominent men to visit business colleges of the state I suggested to them that they discuss with the proprietors of the institutions they should visit their opinion of other institutions located in the same city or the same county. The reports which they brought from the business schools were interesting and to some extent amusing, although not in every instance complimentary. It was their experience, as it had been my own, that bitter rivalry generally exists between persons engaged in the same vicinity in commercial teaching. At that time it was very rare for one proprietor of a business college to say anything of his neighbor or competitor engaged in the same line of business except in terms of severest criticism.

I have known of some cases where two business colleges existed side by side with an equal number of students, possibly fifty or sixty each, where the proprietor of each institution would declare with considerable vigor or vehemence that he himself had more than one hundred, whereas by actual count his competitor could not show more than fifteen or twenty. It is a very common thing for one business college proprietor to state in his advertising that the competing school is badly in debt and will soon go out of business by reason of its inability to meet claims against it.

I admit that in some instances of this kind such a rumor has foundation, and yet, the point I am criticising is this,—too many proprietors of business institutions injure themselves and their own institutions in spending their time tearing down their competitors. I have been able to see in many instances where competition causes some anxiety, for the reason that the field is not large enough for two or three schools, and yet, how much of worry and ill feeling could be prevented if each proprietor and teacher would speak kindly and courteously of the other, work hard to make his own school the best one and give as much attention to the welfare of the young people in his own institution and to the improving of himself and his fellow teachers as he does to the defaming of the teachers and students in the neighboring school.

There is competition in all lines of business and endeavor. In my own line of business I have found that my competitors and their agents are men of good standing and good business ability. They have some books and supplies on their lists that are as good as those offered by myself, and I have generally considered that I am the gainer when I say courteous things of them and their wares, and I know my conscience is easier and my attitude toward the world is better.

There are no more reasons why rival proprietors of business colleges should be enemies than that a man engaged in the grocery trade or the

proprietors of hotels should be continually spending their time and energy in minimizing the talents and business ability of their competitors. A gardener would be regarded as very narrow and foolish if he permitted himself to abuse his neighbor simply because he is raising strawberries for the same market, and when a farmer despises another because both are depending upon the same market for their products he should be regarded as belonging to the same class of narrow individuals as do proprietors of business schools who show a similar disposition and tendency.

Right here is a place for some standard of business courtesy and decency to be established that will not only be of interest to the proprietors but of immense benefit to the young people in those schools, who should have an example of broad-mindedness before them instead of the picayunish spirit of the small man or woman who does not know enough to appreciate the fact that possibly his competitor is just as good a person as himself.

The proprietor or the teacher in a commercial school should be in close touch with the teachers in the public schools. Wherever possible, it should be the aim of commercial teachers in business or in private schools to be a welcome and invited guest to the teachers' meetings of the city schools. They should at all times and on all occasions be a member of a local or county teachers' association and contribute to the welfare and prosperity of such an organization. They should know the librarian of the city or public library and should be able to direct their students to the best books on general culture that the library contains.

True, it is not always convenient or even possible for students in business colleges to give much time to work outside of their special lines, but the work of the commercial teacher should be as broadening as possible, and while they should be thorough in the branches taught, they should avoid in all ways possible creating the impression that the completion of the prescribed course in the business school is anything more than at best a one-sided preparation for the activities of life.

It is not wise, or do I believe it profitable to encourage young people to leave the public schools for the purpose of securing them as students in a business school. The patronage of such schools depends very largely on the demands of the community and the aim should be at all times to secure a higher grade of students rather than to get them as early in their career as possible, through fear that unless they are secured at this time they will be lost to the institution at some future time.

There is one place where teachers in both private and public schools make one of the greatest mistakes in their profession and that is their lack of diplomacy in not emphasizing the good qualities of their predecessors rather than pointing out the mistakes of the teachers who preceded them in their work. It is very seldom that a teacher goes out from a school who has not a number of warm friends among the students. It may likewise be true that in the same room and community there are persons who have criticised the

teacher of the previous year and pupils who have not admired him or her, and yet, how much easier it is to comment incidentally and perhaps frequently on the admirable qualities of the predecessor than to antagonize his friends by unnecessary, though perhaps truthful, comment.

The teacher's attitude toward his predecessor has a great deal to do with the hold he secures on the community. Reasoning in this line it is one of the principles of ethics among teachers that when a person has filled a place in the community, whether it be that of a teacher in the public schools or a minister of one of the churches, that he or she should retire from the field entirely, or, if still residing in the community, assume a friendly attitude and at all hazards to encourage the person who has entered the same field, lest by a lack of acquaintance or knowledge of the situation he make some errors in the beginning. I would briefly state that teachers of all ranks and conditions should speak kindly of their predecessors and successors, or if unable to do so, discreetly avoid saying anything. In a great majority of cases the teacher who does the most talking in a way of criticism of others is the one who is injured the most.

In closing, I would suggest that every teacher of commercial subjects should be a member of the business men's association in the community in which he resides, or, if by reason of circumstances, membership is not possible, he should be affiliated with a club or organization of some kind that will bring him in contact with the real life and business opportunities of the community. To have acquaintance with the salesmen, manufacturers, book-keepers and first-class stenographers in the community should be of great value to the commercial teacher.

In the same line, the commercial teacher should be a member of some strong political organization and should be familiar with the government of the city and of the state in which he resides and he should be acquainted with public officers of state or county who reside within a radius of his acquaintance. In brief, he should be an active politician not ashamed or afraid to be a delegate to the caucus or convention of his party and know by actual observation and experience what the public servants are doing and something of their motives.

If there are in the community persons who are interested in a general reform the commercial teacher should be among the foremost to take an advanced stand. I do not necessarily mean by this that he should turn reformer, but I do believe that his students and the friends of his students should know that he stands on the right side of moral questions. That commercial teachers should be persons of exemplary life and habits goes without saying. They should encourage the spirit of wholesome athletics and discourage in all ways the spirit of rowdyism that accompanies some of our popular college and university games. They should prohibit absolutely any signs of intemperance that may present themselves in or about the school. The student who has no more sense or propriety than to smoke a cigar or

cigarette about the school should be asked to withdraw from the institution, the same as should a professor of the University of Michigan be discharged without previous notice by the Board of Regents if he is seen smoking a cigarette on the University campus or on the streets where he is an example to the young people.

It matters little what are the ideals of men who look to commercial schools for their employes they are always anxious to know that the prospective office assistants have correct notions as to right living and that their teachers have been right from the common standpoint of honor, thoroughness and moral fibre.

WHAT THE EMPLOYER EXPECTS OF THE STENOGRAPHER.

MR. W. A. TAYLOR, CORRESPONDENCE DEPARTMENT, PARKE, DAVIS & CO. DETROIT.

The employer expects of the stenographer good looks, good manners, good hours, and good work. The first condition is by no means irksome or discouraging. Any girl can be good-looking. She can't be too good-looking, but she can be too pretty—too charming. She can capitalize her beauty at too high a figure, or she can rate it too low and so overdo the make-up. But she can't be too good-looking. The good-looking stenographer is one who harmonizes with a clean and orderly environment—who is, as it were, a part of the furnishings—not self-conscious, nor so "different," either above or below the prevailing tone of the business, as to impress the employer with a sense of incongruity.

To be good-looking she must be clean and sweet—as they all are; and well groomed—as most of them are. If she is below par to begin with, these qualifications will bring her up to the required level, and, with the other attainments not yet elaborated, make her as much of a success as any employer has a right to expect.

To be tidy—is this all there is in good looks? With a well washed face, a rational coiffure, a neat-fitting and well-laundered waist all buttoned up behind, manicured finger nails, and personal poise, any young woman between the ages of 17 and 40 has such a start in the race for good looks that if she fails to score it is because she forgets that good looks, to keep themselves in countenance, require the aid of good manners—the second specification.

Of what avail are the arts of cosmetics and millinery if one habitually carries a face that suggests either vinegar or molasses—all frowns or all giggles? Some really good stenographers seem to have an everlasting grudge against the job—for reasons which no mere man may hope to fathom. They can give a civil answer, but the motto wreathed about their belligerent crown and flashing from their insulted eyes is that of the uncanny canny

Scot—"Nemo me impune lacessit." As if any one wished to hit them with a club. The mood is certainly a challenge. I am not going into the metaphysics of the question; there must be a reason, perhaps a good reason, for this insouciant mood; what I wish to remark in passing is that the mood itself is *not* one of the things an employer expects from a stenographer.

The obverse side of the coin is even worse. To be sour does not necessarily prevent one from doing good work—for the work is not of the creative sort; but to be so other-than-sour as to ooze giggles and ogles, making even femininity appear effeminate in the luxury of the practiced pose and the rolling eyes—help! help! from the mushy maid, good Lord, deliver us! She occasionally learns stenography, and practices it—after a fashion. But to the credit of the sex and of the race be it said she is almost as rare as the ringed penguin—at least so far as my limited observation goes.

Here is a badge of good manners. "Miss Smith!" "Yes, sir." "What put it into your head that I was an idiot? Here you make me say 'Your order for brass talks will go forward by telephone. We are for satisfaction.' What in the name of the English language does that mean?" Possibly the speaker doesn't say "English language," but Miss Smith, with the ghost of a smile, answers: "I don't know what it means, sir, but it is what"—oh, here's the temptation: "what *you said?*" O no. Our well-bred lady scorns so ungenerous a retort; not "what you said," she continues, but "what I made out from my notes." Her position is secure—for the present—while she dutifully makes the sentence read: "Your order for brass tacks will go forward Tuesday. Wire if satisfactory."

Shall the employer, or the one whom he employs as a correspondent, give his dictation impartially to all the stenographers in his service, or shall he favor the swiftest, most accurate and most obliging, and load the others up with hack work? If one of the "others," wishing for promotion but lacking the "get-there" stroke, possesses the secret of good manners, she will not sulk or mutiny, but be gracious at the foot of the class and by her womanly behavior compel approval of what she *can* do, doing it faithfully and well, meantime at her own expense acquiring familiarity with the more difficult task.

Some people are paid good salaries for very little else than good manners and good looks—good looks as I have defined them, and good manners as the lady who never calls herself a lady understands them—being "to the manner born."

But the good hours. The time clock registers coming and going, but it cannot make the hours included in the day's work "good" if the lady loiters at her task or gossips overmuch with Edith and Marie; nor can it make full amends for social dissipations of the evening before, the second or third of a series. No employee has a perfect right to offer his or her employer the fag-ends of physical and mental energy left over after the main business of life, the having of a "good time," has been attended to. This is no dictum

of asceticism, for everybody in general, and the stenographer in particular, ought to have a good time—all the time. It is all a matter of definition. Late hours too frequently repeated make good hours in the office an impossibility. But the girls ought to have such a fund of good health as to be able to take a full evening of social enjoyment now and again without damage to their working capacity.

The employer wants some one he can depend upon—this is the long and the short of it.

Now we come to the main consideration—good work. A course in shorthand is an admirable discipline in accuracy. Everything, even to the shading of a line, counts—makes a difference. If knowledge is, as has been said, the perception of differences, here, in the Graham textbook, is the linear demonstration of its character. To be a good stenographer is to differentiate between things that look alike but are not the same—aye, even sometimes between things that look the same but differ in their bearings. Years ago, when I thought of becoming a stenographer myself—before typewriters had assumed the commercial importance they now enjoy—I was dissuaded by a court reporter, who told me that to be a good stenographer I must know practically nothing else but shorthand. It makes such demands upon the memory and the constructive faculty. Now we think nothing of putting a 15-year-old girl through the mill and making a good stenographer of her in six months—some say three! And of course she gets a “situation” as soon as she graduates. The first difficulty is the one of mental development. Shorthand is an art built upon a science, and the science is not that of straight lines and curves, but of the English language. Give a girl a perfect knowledge of first, second and third positions, halving, doubling, shading, phrasing, and you merely put into her hands the tools for building up what English she knows into the edifice of her vocation—she can make no intelligent use of the English she doesn't happen to have. And I presume there are some who fail to make the best use of what they do know, having no grasp of the true relationship between good English and good work. In other words, their *understanding* of the language is not increased by their systematic conversion of it into the terms of an imperative art. But if they are grounded in the organic principles of literary expression, knowing the “parts” of speech because they belong to the body of speech, and because that in turn belongs to the universal mind of which the stenographer herself is one of the incarnations—if, in short, words are sacred to them as signifying one thing and not another—then their art becomes an effective means of sharpening their wits and familiarizing them not only with the scope but with the vitality of language. The one ever-present effort in dictation is to make the paper talk, not mumble or coruscate. The commercial correspondent gets to the point, but not brusquely. He has to choose not words alone, but phrases and arguments. His speech must be like an arrow speeding to its mark. And can a stenographer of fair intelligence and trained memory

and judgment miss the incidental benefit of writing down these sentences? She can if she is not there; and frequently she is not. She is not really interested in language, but in fancy work or the next "party" or some real or hypothetical "fellow." I haven't a word to say against these prepossessions, but a little abstraction into the soul and spirit of her work would benefit her—make her a better stenographer, perhaps later on a better wife for some fortunate young man.

But pointedly, what executive factors must characterize the satisfactory work of the stenographer? Precisely what does the employer expect in the quality of the taking down and transcribing of "notes"?

The ability to translate the spoken word into intelligible typewriting, so that the "dictator" can discharge from his mind every other thought but the thought of what he is to say. It happens sometimes that he sees the happy culmination of a more or less involved train of reasoning, and the words occur to him in strict relation to the vigor of his thinking; all he wishes is to unburden his mind. The stenographer must know the words that fall from his tongue—must know how they look in print and what they mean; not absolutely, of course, but well enough to reproduce them coherently and clearly. More than that, she must be sufficient master of her art to see them take their proper phonographic outline as fast as they are spoken. Words must be to her much more than sounds; they must integrate themselves in her occult characters as nothing can do that is not clearly comprehended. Her intelligence is the medium of their transmission. She not only hears them, she sees them; and how can she if she doesn't understand them? All of which is equivalent to saying that she must be practically as good a linguist as the party who is dictating to her. Many branches of business correspondence exact but little in this regard from either the correspondent or his amanuensis; so the prospective graduate in shorthand need not despair because there are several thousand words in the English language that she doesn't know the looks of, much less the meaning of. There are gradations of responsibility, and the demand for second-class, third-class or even fourth-class stenographers continues brisk. The employers may not admit it, but the pay rolls prove it.

A knowledge of words alone is not enough; one must apprehend the principles of grammar, whether its rules are recalled or not. Words that do not build themselves into symmetrical sentences are gibberish. The stenographer must "make sense" of her notes, and this she can do only through an understanding of the normal construction of sentences, for no shorthand system ever devised makes all the words independently clear—they depend upon the "connection." A high school course, *assimilated*, stands the stenographic student in good stead, for it establishes in her mind a standard of correct speech. She is not content with the superficial reflection that "the sentence *sounds* all right;" any old rhetorical fustian sounds all right to those who don't care what it means; she must either be absolutely

sure it is what the dictator said, punctuation and all, or she must be able to analyze the sentence, parse it if necessary, and paraphrase it. Sometimes the dictator doesn't say exactly what he wants to say, and many a finished sentence is due in part to the intelligence of the stenographer. The exacting employer appreciates this aid, even if he doesn't say so.

The stenographer should know not only the words themselves, and of course the way to spell them, and the way they "go together" in intelligible sentences, but she should know more about punctuation than as a matter of fact she does know. Correct punctuation makes easy reading. Everybody appreciates it, though very few know beforehand where the commas ought to go and where they ought not to go, when a dash is needed and when it is superfluous, whether quotation marks at the beginning and ending of the quotation are always required or always sufficient; and so on. Fortunately the English language is free from accent marks; but the marks of punctuation cannot be dispensed with. They give animation, expression, to the printed page and to the artistic dullness of the typewritten letter. And of course they are just as incongruous where they don't belong as they are effective where they do. The red of my lady's lips would ill become the tip of her nose, though there is such a short distance between; and the commas in a sentence like this, "When I hear from you (comma) I will write (comma) and tell you all about my trip (comma) and the new people I met," are quite as offensive by their presence as the absent ones in this one are by having been forgotten by the stenographer: "We would refer you to Mr. John Smith who, just from Congress will be glad to meet you as he is interested in the pure food and drug bill a measure introduced by his colleague from Massachusetts Mr. James Jones." I have often wished I might tell my stenographers to *always* place a comma before the word "but," since the majority of them fail to do so unless it is in the dictation; but the rule would have exceptions and would therefore be worthless. The dictator of a letter ought not to be compelled to break the thread of his talk to say "comma," "period," "interrogation." The other points he alone knows what he wants done with, and they ought to be dictated, but the stenographer should know by the sense when a comma or a period or a question mark is needed. Is it possible to teach them in a commercial college after they have passed through high school with their native ignorance unscathed?

A stenographer once came to me in all seriousness, seconded by one or two of her associates, and said: "Mr. Taylor, we would like to know when the *a* is to be used and when the *the*—how are we to tell whether the definite or the indefinite article is proper?" I thought it was a joke. I could only say that the letter should be written as dictated. To go into the details of grammatical propriety on the subject would have taken me farther than I could have been followed, farther indeed than I could see my own way clearly. No one but the writer of the letter knows whether he wishes to say "a" or "the." The shorthand "system" should take care of the difference, as it

does of the difference between "on," "of" and "in." Any rule of interpretation, except that of direct transcription, would be subject to exceptions depending for their validity on the thought in the mind of the writer; so the "notes" should be definite whether the article is or not.

The last consideration is this: the ability of the stenographer to make adequate use of the system of shorthand she writes. The poorest system, thoroughly mastered, is better than the best only dabbled in. What the stenographer requires is thorough familiarity with the *arbitrariness* of the signs she employs. The strokes and curves should be to her as individual and non-convertible as Arabic numerals, each standing for some one thing definitely. The harder to learn, the easier to remember. The employer expects her to take down exactly what he says, not something like it pieced out by what she thinks he meant to say or might have said. It is no light task, but the ability to perform it always depends upon two factors besides the subject's willingness to learn: first, as already said, her knowledge of English; second, both theoretical and practical acquaintance with the details of her special art. When she masters the principles of stenography and trains her fingers to think in its terms she will be able to satisfy any *reasonable* employer; for, the quality of the work being assured, its quantity follows, as a matter of honor, pride and emulation.

In every business office where stenographers are employed, a thousand details not provided for in the curriculum require attention; and, other things being equal, the brightest, most sensible stenographer, the one with the best memory for general and incidental facts, will command the highest consideration.

Unfortunately a great deal of hack work has to be done by those who have ability for better things. The stenographer is not the only one whose tasks become monotonous. She must have patience, endurance, and the mental resiliency of youth. And she must hope for better things. I think she generally does.

PHYSIOGRAPHY CONFERENCE

IS THE ELIMINATION OF GEOLOGY FROM THE HIGH SCHOOL COURSE OF STUDY ADVISABLE?

SUPERINTENDENT WM. E. GOULD, PINCONNING, MICH.

I believe that sometimes we fail to agree or reach a harmonious conclusion in our discussions because we approach the subject of discussion from different view points. In my answer to the question, "Is the elimination of Geology from the high school course advisable?" I desire it understood that I am speaking from the standpoint of the ordinary village high school. After long service in high school work, I desire to place myself on record as firmly convinced that the elimination of Geology from our high school course is neither advisable nor wise.

That the elements of Geology are so seldom taught either in our primary or secondary schools, is to be regretted, as is also the fact that at present there seems to be no tendency manifest toward improvement in this particular. In our state, which enjoys a justly high reputation for the excellence of its schools and teachers, even less Geology is studied in school than was customary a quarter of a century ago. It seems to me that this is unnecessary and unwise. Michigan is noted for its mineral resources; a large part of our wealth comes from the crust of the earth; no other region furnishes a better field for geological study; then why should the great body of our pupils, who never get beyond the high school, be denied a knowledge of the elements of Geology? A science which has done so much for industry, civilization, and culture as Geology has, should not be thus ruthlessly thrust aside for studies less worthy.

"Such a lifelong ignorance of Geology," says Professor Winchell, "is quite as unnecessary as deplorable. The elements of the science are not as a science difficult to master, nor incumbered with a greater number of scientific terms than the sciences of Physiology, Physiography, Biology, or Chemistry. The data of Geology, moreover, lie all about us, and are the most obtrusive and noticeable of all the objects which we daily encounter. Stones and rocks never fail to awaken the curiosity of the boy or girl; and there are few children who have not made collections of stones, distinguishing their varieties by precisely the same characters as the most expert student. Assuredly, it seems a dictate of educational philosophy to take a hint from these childish predispositions and aptitudes and shape the child's education with some regard to what he seems peculiarly fitted to study."

"Say not ye—'There are yet four months, and then cometh the harvest. Lift up your eyes and look on the fields; for they are white already to harvest. And he that reapeth receiveth wages."

What then, are the causes that have led to the thrusting aside of Geology as a high school study? It assuredly cannot be because of its intrinsic unworthiness. Neither can the blame be laid at the door of our high school instructors; Michigan teachers have always met every demand made upon them in the matter of qualifications. The real cause must be searched for higher up. Geology is not included among the entrance requirements of our Normal Schools, Colleges, or University. Our Normal Schools do not include Geology among the subjects required for graduation, and in some instances discriminate against Geology by not offering the subject even as an elective.

In our examination system, Geology is not offered except to applicants for the State Life Certificate, and even then it is optional with the applicant whether he write upon Geology or one of the languages. I cannot say why all these causes have come into being, but I certainly believe that some one has blundered. There are yet a faithful few who insist that Geology shall retain its birthright, and I cannot help thinking that that school is indeed fortunate which enrolls among its teaching force one of these teachers.

Whenever one of the adherents of Geology as a high school study agitate the matter, they are met with the objections, that there are few teachers who can teach Geology; that the course of study is too crowded to admit Geology; that Physiography is good enough to replace Geology; that high school pupils are not mature enough to study Geology; or that the cost of equipment stands in the way. If there are few teachers who can teach Geology, our Normal Schools and Colleges are not doing their duty. They should make Geology a required subject and send out no graduate who is unable to teach the elements of the subject. Geology should be placed on the required list of subjects in our examinations for the State Life Certificate and the Indorsed First Grade Certificate.

If our normal schools, colleges, and State Board of Education insisted upon a knowledge of Geology on the part of prospective high school teachers there would be no lack of teachers qualified to give instruction in Geology. If our course of study is too crowded, let us strike out some less worthy subjects, shorten the time given others, and at least give one semester to Geology. I have never had any difficulty in finding time for teaching the subject.

Physiography is all right. In many schools it is given too little time in the course. Let us, if we can, extend the time usually given to Physiography. But let us never give voice to the fallacy that Physiography can replace Geology. Physiography deals largely with results; Geology with causes.

The claim that high school pupils are not mature enough to study

Geology is absurd. The experience gained by conducting a dozen classes through a high school course in Geology assures me that high school students can grasp the work and find great benefit in its study.

As long as our present examination system exists many high school students will find their way into the smaller rural schools without attending higher institutions of learning. The knowledge gained in the high school by studying Geology for even a semester will be of immense benefit to them in teaching Geography and Nature Study.

The cost of material is not greater than for the proper presentation of Botany or Physiology. Every region in our state is full of free material to be had for the gathering. The great out of doors that lies around us will furnish half the material needed. Field work around our lakes, hills, marshes, and streams will bring an abundant supply of fossils and rock fragments. The glaciers of long ago brought an abundance of geological material to our very doors. Each railroad cut and especially each of our drainage ditches are worthy of field investigation. We cannot emphasize the field work too much. When can a teacher enthuse his class with a greater love of nature than when doing live field work in Geology? The material that lies all around us, the glacial hills and other surface formations, are a perpetual invitation to us to study. The interest, enthusiasm, and good work of a field class in Geology makes the teacher's life worth living. I would like to dwell upon methods, but that is not the province of this paper.

Geology is as important to the world as the other sciences. Prospective teachers should take a course in Geology before attempting to teach Geography, Physiography or Nature Study.

I am pleased to note that the state of Indiana has given Geology an important place in its course of study for high schools. I consider that our state is far behind in that respect. It is also worth noting that no other science is provided with better high school texts.

A course in Geology, if it be but a hundred lessons, broadens the mind, puts one in touch with nature, and brightens the years of adult life. It should follow Zoology and Botany to develop and fasten in the student's mind the great truths of evolution. It should follow Physiography to give a broader conception of the earth and the causes that have shaped it as a home for the human race.

If for no other reason than to develop the truths of evolution, Geology should be taught in every high school. There are yet in this twentieth century, relics of the past who are teaching that this great world was made in one hundred and forty-four hours. They are blind leaders of the blind. Evolution is working all about them; in nature, in history, in human lives; but they cannot see it. The convulsions of Krakatoa, Martinique, California, and Sicily cannot convince them that the sixth day of creation is not yet finished. Dogma and creed are to them more exalted than science and truth.

The great orators may thunder their rhetoric against the truths of evolution, but we may remind them that:—

“Truth crushed to earth will rise again;
The eternal years of God are hers;
While error, wounded, writhes in pain,
And dies amid her worshipers.”

Let us then send high school students out with a right knowledge of the great truths of evolution. There is no better way to do this than by following Biology with Geology.

Physiography and Geology should go hand in hand in our high school work. The one cannot supplant the other. We must find time for both. Of the two Geology is the more broadening to the mind. Both as sciences are quite modern, yet three thousand years ago it was written that “The wind turneth about—it turneth about continually, in its course, and the wind returneth again in its circuits. All the rivers run into the sea, yet the sea is not full; unto the place whither the rivers go, thither they go again.”

WHAT SHOULD BE TAUGHT IN A YEAR'S HIGH SCHOOL COURSE IN PHYSIOGRAPHY.

PROFESSOR WM. H. HOBBS, UNIVERSITY OF MICHIGAN.

In the high school, physiography seems now to be a Joseph thrown into a pit by his brothers (only here it is the sister sciences) and left there to languish. Like Joseph, also, a too ready narration of dreams which forecasted the future, may in part explain the contempt with which the subject is regarded. Yet Joseph came eventually into favor and took rank above his brothers. Is it too much to hope for a future in which physiography will be granted a position on a par with her sister sciences?

The answer to this question must depend very largely upon what physiography is interpreted to mean, and in what manner the subject is presented to pupils. Today high school physiography is too often neither fish, flesh, nor fowl; but includes most of the sciences from astronomy to geology, botany, zoology, meteorology, ethnology, ethnography, and perhaps others. To judge from the textbooks in common use, the number of subjects included is inversely proportional to the length of the course; and there is much danger that the pupil who has finished will have a mistaken notion that he knows something about these sciences.

Obviously if we are to make of physiography a useful and even necessary course in the high school, we shall have to hem in the field and direct the study toward the accomplishment of some very definite objects. It

should be borne in mind that the greater number of those who elect physiography or physical geography, will not continue their training at a higher institution of learning, and it is, therefore, not primarily as a basal science, or as a preparation for university courses that the subject should be approached.

Physiography is in no proper sense a basal science, as are, for example, physics and chemistry; and it is therefore most unfortunate that it cannot be taken up by mature pupils who have already taken at least their high school physics. The subject must be regarded as one which affords a training for life; and it would be easy to show not only that as such it is of vital importance, but that this training is one which is, further, the best possible as a preparation for the courses in the university. If properly taught by a well equipped teacher, there is no study taken up in high school which offers greater opportunities for inculcating habits of observation and reasoning from facts personally assembled.

I should like to see the following major subjects included in high school physiography as it is taught in the state of Michigan:

1. The processes of stream erosion, of shore action, and of continental glaciation studied with frequent excursions to a local stream, to a near-by lake, and over accessible drift deposits. This work should come at the beginning of the course, so as to enlist at the outset the interest, at the same time that it develops the power and habit of observation.

2. Study of the method of construction of a contour topographic map. I am convinced that pupils often devote much time to the preparation of sections from maps before they have any conception of the method of their construction and before they can see the relief which they represent. For the average student the preparation of a map from a visible model with the use of simple apparatus, I regard as essential.

3. Study of the main physiographic features, (1) of the local community or county, (2) of the state of Michigan, (3) of the United States, and (4) of the entire globe. In the larger provinces, not only the features of the first magnitude, but some details of each province may often be considered in such a way as to develop their character. Whenever possible, pictures and maps should be used together as illustrative material.

4. The study of the physiography of the atmosphere may be added to that of the lithosphere, but it will be best to take upon faith subject to later confirmation such matters as the general wind system of the globe. Isobars and isotherms and their arrangement, can be the better comprehended if the subject of topographic contours has been properly taught. The nature of adiabatic heating and cooling of air is capable of simple illustration, and, if grasped, it will be possible to take up the movements of cyclonic areas and their relation to local winds and to cold and hot waves.

To properly present the above subjects it will be necessary to provide the school with a projecting lantern and a set of selected slides, with appa-

ratus for the study of map contours, with a selected series of topographic atlas sheets, with good physical atlases, or better, wall maps, with a few simple meteorologic instruments, and with a series of weather maps. It should be possible to obtain all of these for from \$150 to \$200, and certainly no attempt should be made to teach a laboratory science without at least this outlay for equipment.

I have laid stress upon the necessity of learning to read a topographic map for the reason that our government, co-operating with the several commonwealths, has expended and is still expending, much treasure in preparing maps of the national domain—maps which are supplied to any who desire them and at a merely nominal price. The farmer, the engineer or the business man, is thus provided with information which, if he but knows how to read it, cannot fail to be of the greatest service to him. The teacher or student of local geography is almost without cost provided with a description of the geography about his home. If he desires to extend this study to other districts, the way is open to him. This great opportunity, hardly yet appreciated, makes it essential to give to each pupil the brief but sometimes difficult training which is necessary to admit him to the use of this vast library of geography.

A knowledge of elementary meteorology is considered so important because the information published daily by the weather bureau can be made of great service to the individual who knows how to interpret it. The local weather indications he may at times interpret as accurately as the official forecaster, and he may at least know when the official prediction is likely to be well founded, as well as when it is of doubtful value.

The comprehensive study of the physiographic features of the world and of special parts of it, lays an excellent foundation for the courses in history as well as those in geography which the student may later pursue provided he takes up work at a higher institution of learning. The poorly prepared teacher will certainly find it difficult to make the subjects above outlined take up the time of the course. On the other hand, the teacher who has received the proper training will perhaps find it difficult to compress into the time at his disposal all that he would like upon these subjects. This is, no doubt, the real reason why so many unrelated subjects are crowded into the briefer course, and we may hope that in the future there will be less to be unlearned in physiography than there has been in the past.

SOME PHASES OF FIELD GEOGRAPHY IN THE HIGH SCHOOL.

PRINCIPAL F. W. FROSTIC, CROSWELL HIGH SCHOOL.

The purpose of this paper is to present some views on field geography from the standpoint of a high school teacher of science. I shall attempt to point out some work that can be accomplished in high school classes, and the relations of this work to the general course in physiography. The material here presented is neither all new, nor all original; but it has a value in that it has been used successfully in actual class work.

The introduction of laboratory work in and out of doors is placing physiography on a level with other scientific subjects in the high school curriculum. The value of this class of work has been realized so fully within the past few years, that teachers who have used it will never again return to the method of memorizing dry text book facts. The subject of physiography, as presented a few years ago, left the student with the impression that if he would see anything of interest in geographical lines he must visit some far-off region—a region as vague to him as that in which he built his “castles in Spain.” He was not taught that here at home was to be found the same great forces at work as those which carved the cañons of the Colorado, or sculptured the pillars in the Garden of the Gods. The topographic features in the fields about the student’s home were depreciated or utterly neglected.

The appreciation of a region will be in proportion to the individual’s ability to interpret its phenomena. The subject of physiography as formerly taught seldom aroused any active interest in the world about the student. It is the purpose of field study to establish the connection between the natural forms and the types of the text. No amount of laboratory or text book study will compensate for the lack of contact with these forms in the field. Text books are written from material which exists in the field. They should serve in leading the pupil to find these same principles and forces at work in the world about him. This will not be accomplished, however, unless the pupil is trained to apply these principles by a competent instructor. The student cannot make these applications alone. He becomes discouraged at the very outset by the complexity of the features about him. Laboratory work in the class room deals with the *representation* of forms, but not *with* forms. In the fields we meet the forces of nature at work and see before us their ever-changing products. The laboratory has accomplished much in making physical geography less abstract, but much more can be accomplished by the addition of field work, unless the region is very barren of material.

There are few schools in Michigan without some good field material within easy reach. The course in physiography should be emphasized along those lines which find their fullest development in the region of the school.

If we live in a glaciated area, the phenomena of glaciers and the glacial period should occupy a prominent place. If near a river, much time may be spent profitably in the study of streams and their courses.

The fields about the high school at Croswell, Michigan, will serve as a type of such material as may be found about many high schools in our state. The city is situated on the outer edge of an outwash plain sloping westwardly from a morainic belt of hills which lies along the eastern side of Sanilac county. This terminal morainic belt is here about two miles wide, the eastern side forming Forest Beach. Beyond this glacial lake beach is a narrow coastal plain stretching eastwardly to Lake Huron. Eastward flowing brooks, having their head waters in this moraine, meander across the plain, flowing slowly until they near the lake, where they have cut very deep ravines. Through the city flows Black River, a small stream about fifty miles long, rising in southern Huron county and keeping along the edges of the outwash plain until it empties into St. Clair River at Port Huron. Black River, with a number of tributaries entering it, is a very serviceable stream for the study of rivers and river courses. Toward the west are a number of peat bogs in a level lake plain, beyond which lies Belmore Beach, in the form of a spur, reaching into this portion of the county from the west. Thus, in a radius of five miles we find excellent material for field work in the following general topics: ground water; weathering; wind effects; soils; soil on slopes; work of running water; alluvial cones; river valleys; rapids and falls; stream piracy; drowning; ponding; deposition by running water; glacial phenomena; coastal plains; lakes and lake beaches.

Before attempting any work in the fields with classes, all the available published material on the area should be read and mastered. If any maps of the section have been made, they should be obtained; especially those of the U. S. Geological Survey and those of the State Geological Survey. The ground should be studied carefully, and compared with the published material at hand. Copious notes should be collected and filed so as to be available in planning trips. It is well to map the important features not well represented by the topographic maps where more detail is required. The text book should be looked over carefully, and a complete outline should be made of the topics treated. On the same page with each topic may be arranged the laboratory exercises intended for use and such field material as will be found suitable for the topic treatment. This will aid materially in planning the trips and in correlating the work. In all cases the field work must be determined by the material at disposal in the region. The number of trips must find their limit in the material at hand, the ability of the class, and the time at disposal.

If convenient the regular class hour for physiography and the hour following may be used when making field excursions. I have found the last period of the day most convenient for the regular class. When excursions are to be made, there is never any objection on the part of the pupils to

devoting an hour after the session when needed. Longer trips may be attempted on Saturdays.

Each excursion must be carefully planned by the instructor as to distance, time, and material to be presented. It must not be understood that only those topics predetermined should be presented in the course of a trip. Many times other subjects present themselves which demand immediate attention. Yet the excursions should have a definite object in view. This will avoid needless wandering and loss of time. The most effective work can be accomplished with ten or twelve students in a division for early work. Later, more may be taken at a time.

Each student should be provided with a note book for field notes, a sharp pencil, and a rule divided into tenths of an inch. He should be taught to arrange the forms observed under definite topics in the note book. No attempt should be made to arrange a trip's results in the form of a narrative. Each phase of the work studied should be treated separately, with specific data on location, description, and other phenomena observed by the student. The relation of each feature to the general surface should be emphasized. A terrace should be treated as a part of the river valley it lies in, and its relations to the stream, floodplain, scallop, bluff, and other features noted. Every topographic feature treated should be presented as a problem for the pupil's consideration. He should be taught to arrive at his conclusions through the medium of careful questioning on the part of the instructor. It must be clearly borne in mind that the teacher is not to take the class out with the intention of *showing* them certain examples of features or *telling* them how these features were formed. The pupil must be taught to use his eyes and think out the solutions for each geographical problem. He is trained in this way to observe correctly. The same features should be visited at different times of the year to note the changes in progress and to impress the pupil with the importance of the forces effecting these changes.

It is well to have the student map many of the surface forms studied. Work should be begun in this line in a very elementary manner. A school-yard, a hill, or a strip of road with some simple feature crossing it, will serve for early subjects. The student should be taught to work with a chosen scale and to measure the distance between points in paces, having previously determined the average length of his pace by trial. The method of running a base line and taking off-sets at right angles at measured distances is very satisfactory. Bluffs should be represented by hachures. The early work will be crude but as the exercises proceed the pupil will learn rapidly how to represent fairly the surface features on paper. Later, the exercises may be extended to stream courses and other forms. The map made on the ground is to be the permanent one. I believe that contour maps should not be attempted in the field. Their construction requires too much skill for pupils at this age. The time required is also too great for the usual time allotted for out-door work. Care must also be taken in field classes, not

to introduce features and problems which are too complex for the comprehension of the class. Especially in glaciated regions one is liable to make this mistake.

The features studied in the fields will give the pupils a clearer conception of the types which are treated in the text. If, for example, the alluvial deposits of the Cucamonga region are under consideration, a visit made to a small alluvial cone in the fields will aid the pupil to understand more fully the forms, features, drainage, fertility and other data of that region about which he is reading. Nothing will enable one to read other regions so well, as the ability to read one region well that he has lived in. After pupils have a clear conception of a topographic feature in the fields, the laboratory work on topographic maps will have a new meaning for them. They will now read the map, not as a series of lines and symbols, but each represented feature will be associated with the real features as they exist in the field. Whenever possible the field work should precede the laboratory work and in most cases the study of the text.

The relation of field work to the general course in physiography may be summarized as follows:—

1. Field geography is in keeping with the great movement of today to put scientific subjects largely on a laboratory basis.
2. It acquaints the student with the living world about him and teaches him to appreciate his home scenes.
3. It teaches him to observe carefully.
4. It teaches the pupil to apply the knowledge he has gained from the text.
5. It aids him in gaining a clearer conception of other regions.
6. It enables the pupil to read and use maps to advantage.
7. It teaches patriotism.

One of the greatest impediments to the rapid adoption of this kind of work is the lack of training on the part of the instructors. It is essential that a teacher have some professional training in the work of applying to the land about him the principles found in the text. Much time is lost and energy wasted in attempting the work without a definite idea of just what is to be accomplished. The essential minimum in training for a teacher is a knowledge gained, even in a limited area, by a direct verification of text book principles in the field. Whatever may be the teacher's preparation from books, no amount of this will compensate for a fair amount of first hand knowledge gained in the field. The interest which will have been aroused in the teacher by this work will in turn be awakened in the pupil. By contact and intimate acquaintance with the forms and features of the land about him, the pupil will learn to love his country with a patriotism that will make the words, "I love thy rocks and rills" a living reality.

THE TRAINING OF THE TEACHER OF PHYSICAL GEOGRAPHY.

MR. L. D. SCOTT, UNIVERSITY OF MICHIGAN.

Of the sciences studied in the secondary schools physical geography is the worst taught. This is the statement of one prominent in educational affairs of this state, and his reply to the usual question was, poor training. We cannot blame the teacher altogether for this, for I know of cases where a teacher has been informed some days after the new term has begun that it will be necessary to have an extra class in physical geography and that he will have to take it. Although protesting that he has never even studied the subject and is not interested in it, he is told to take the text book and read it up—it is easy. He may be teaching three or four subjects and has not the time or ambition to do the extra work even if he should become interested in it. So he studies the lessons from day to day and his knowledge is limited to the text in use at the school and, possibly, to the part already covered. The result is inevitable. He has no interest or enthusiasm and can impart none, and the pupils are naturally glad to get through with a subject that could be made as interesting as any of the subjects taught.

What is necessary, then, is trained teachers and the school authorities are to blame if they do not get them. Then comes the question as to the training of the teacher. First, we must decide the place of physical geography in the curriculum, the amount of time to be given to the subject, and the subject matter. At present the subject is taught quite generally in the first two years of the high school and the time given to it is one or two terms. This means that the course must necessarily be elementary.

It is possible to state some general lines upon which the training should be based. The first is that the basal work should be mastered at the beginning. This must surely include physics and chemistry and possibly the studies often correlated with physical geography such as astronomy, botany, zoology, plant and animal ecology, mineralogy, lithology, and history. However, we are not to charge all of these studies as preparatory to physiography for they are all related and the average teacher has to teach one or more of them. Mineralogy and lithology have no place in the secondary schools, but will be found extremely valuable to the teacher.

With the preliminary work out of the way, the training in our special branch comes next. Geology and physiography are so closely related that it is often hard to find the dividing line and the teacher's training involves a knowledge of both. The training should begin with a general course in dynamical, structural, and historical geology. After the principles of these are known, a course in physiography especially planned for teachers should follow. This course should put physiography in its proper place with reference to geology and should include field work, the demonstration, use and discussion of special pieces of apparatus; and laboratory work and methods.

The field work is the most important adjunct to the class room. The subject is an out-of-doors one dealing with familiar things in a new light in a macroscopical rather than a microscopical manner. Here is the teacher's chance to get and keep the pupils interested.

In the training course the laboratory is the place for the discussion of the apparatus and general methods of management, but should not be given over entirely to that. The government has surveyed and mapped a large part of the territory of our country, and these maps are a valuable aid in the teaching of physiography. So, in the laboratory we would have the future teacher become familiar with these maps so that the reading of them is a process similar to reading of a printed page, but in which the visual imagination plays an important part. Then the principles of the interpretations of the regions represented, considering their development, history and economic importance, should be studied. We consider these maps so important that an elementary course in map making is recommended. This should consist in actually making a map with the use of simple instruments such as the plane table, hand level, compasses, etc., which does not involve any higher mathematics. In this way an appreciation of the degree of accuracy as well as the limitations of these maps will be gained.

Of the branches of physiography taught, meteorology is the most difficult. It demands all the teacher's ingenuity and so it is all the more important that he have a good grasp of the subject. The work suggested should give a thorough knowledge of the essential principles controlling weather and climate, the use of simple meteorological instruments and the study of meteorological data. The latter should include both their own observations and the daily weather maps, and the bulletins and reviews issued by the government.

This should give the teacher not only a good grasp of the subject but also an appreciation of the general lines along which the teaching of the subject is developing, and is suggested as a minimum. It is to be hoped that with this introduction enough interest and enthusiasm will be instilled to spur him on to further work, especially reading and field work, for the subject is growing and one must at least keep up with the new developments.

SYNOPSIS OF BUSINESS MEETING

UNIVERSITY HALL, April 2, 1909.

The meeting was called to order by President L. H. Jones. The minutes were read and approved. Reports were made by the Secretary-Treasurer and the Auditing Committee.

FINANCIAL REPORT OF THE SECRETARY-TREASURER FOR 1908-09.

Receipts.

March 1, 1908	—Balance on hand in Savings Department.....	\$ 20 00
	—Balance on hand in Commercial Department.....	64 82
April 4, 1908	—Deposited dues and receipts for the 1908 meeting.....	347 95
May 6, 1908	—Back dues	24 00
July 31, 1908	—Back dues	5 00
August 24, 1908	—Back dues	19 00
Sept. 5, 1908	—Back dues	2 00
11, 1908	—Back dues	2 00
17, 1908	—Back dues	2 00
Dec. 10, 1908	—Ads \$16, back dues \$2.....	18 00
16, 1908	—Ads.	18 50
23, 1908	—Back dues	2 00
28, 1908	—Ads.	5 88
Jan. 4, 1909	—Ads.	21 50
Feb. 20, 1909	—Sale of Proceedings.....	70 00
26, 1909	—Ads.	10 00
March 13, 1909	—Ads.	8 75
Total receipts		\$641 40
Total expenditures		541 56
Balance		\$ 99 84
In Farmers and Mechanics Bank, Savings Department.....		\$20 00
Commercial Department.....		79 84
Total in bank.....		\$99 84

Disbursements.

1908		
March 18	—Check No. 90, for program postage.....	\$ 10 00
19	—Check No. 91, for program postage.....	10 00
21	—Check No. 92, for American Express.....	41
31	—Check No. 93, for cash box and padlock.....	1 20
April 3	—Check No. 94, for Chemistry Conference.....	11 50
14	—Check No. 95, for clerical work.....	4 00
15	—Check No. 96, for salary of Secretary.....	100 00
25	—Check No. 97, for clerical work.....	3 20
May 2	—Check No. 98, for postage	2 00
2	—Check No. 99, for posters, badges, tickets.....	13 00
2	—Check No. 100, for L. C. Gillette, posters.....	2 00
2	—Check No. 101, for Prof. C. H. Judd.....	58 25
2	—Check No. 102, for janitor service.....	2 50

	2—Check No. 103, for Prof. J. A. James.....	12 75
	2—Check No. 104, for Prof. D. C. Monroe.....	23 50
	2—Check No. 105, for Prof. G. L. Burr.....	24 50
	2—Check No. 106, for Prof. E. W. Dow.....	2 50
	2—Check No. 107, for E. E. Burdick (lantern).....	2 00
	2—Check No. 108, for Prof. J. A. Angel'.....	15 00
	6—Check No. 109, for clerical work.....	17 70
June	5—Check No. 110, for Prof. N. F. Smith.....	9 56
July	17—Check No. 111, for postage.....	2 00
August	13—Check No. 112, for postage.....	3 00
Sept.	5—Check No. 113, for postage.....	2 00
	14—Check No. 114, for Prof. F. W. Kelsey.....	8 79
Oct.	21—Check No. 115, for postage.....	2 00
Nov.	9—Check No. 116, for postage for Proceedings.....	18 00
	30—Check No. 117, for John Thomas.....	2 00
1909		
Feb.	8—Check No. 118, for postal card notices.....	2 50
March	8—Check No. 119, for postage.....	2 00
	13—Check No. 120, for postage for programs.....	10 00
	16—Check No. 121, for postage for programs.....	10 00
	16—Check No. 122, for printing, A. A. Press.....	150 00
	22—Check No. 123, for postage for programs.....	3 00
	Total expenditures	\$541 56

(Signed)

L. P. JOCELYN,
Secretary-Treasurer.

REPORT OF THE AUDITING COMMITTEE.

We have examined the accounts of the Secretary-Treasurer and find the same to be correct.

We desire further to state that in our opinion the plan of the Secretary-Treasurer in transacting all receipts and disbursements through the bank is to be commended as both efficient and safe.

We would also commend the plan inaugurated this year of admitting to the meetings and conferences solely by membership badge or by ticket. It should need no argument to convince every teacher in the state, whether in college or high school, that it should be at once his duty and his pleasure to identify himself, by paying his membership fee and wearing his badge, with the Michigan Schoolmasters' Club, an organization that has won international recognition as one of the most meritorious teachers' associations in existence.

ARTHUR G. HALL,
T. PAUL HICKEY,
Auditing Committee.

• NOMINATING COMMITTEE.

- W. A. Grieson, representing the club at large—Grand Rapids.
- S. B. Harvey, representing the club at large—Hillsdale College.
- L. P. Jocelyn, representing the club at large—Ann Arbor.
- F. A. Barbour, representing the English Conference—State Normal.
- W. A. Morse, representing the Classical Conference—Detroit.
- Helen F. Naumann, representing the Modern Language Conference—Port Huron.
- C. S. Larzelere, representing the History Conference—Central Normal.
- W. H. Pearce, representing the Mathematical Conference—Adrian.
- L. A. Paschke, representing the Physics and Chemical Conference—Jackson.
- Edith Pettee, representing the Biology Conference—Detroit.
- C. B. Bowerman, representing the Commercial Conference—Detroit.
- E. R. Washburn, representing the Physiography Conference—Dexter.
- C. S. Dennison, representing the Drawing Conference—University.

REPORT OF THE NOMINATING COMMITTEE.

President—E. G. Lancaster, Olivet College.
 Vice-President—Mrs. Cornelia Steketee Hulst, Grand Rapids.
 Secretary-Treasurer—Louis P. Jocelyn, Ann Arbor.

Chairman of Classical Conference—F. W. Kelsey, University.
 Secretary of Classical Conference—C. L. Meader, University.
 Chairman of English Conference—F. N. Scott, University.
 Secretary of English Conference—Miss Sara Whedon, Ann Arbor.
 Chairman of Modern Language Conference—J. A. C. Hildner, University.
 Secretary of Modern Language Conference—Miss Ethel M. Gregg, Detroit Central.
 Chairman of History Conference—A. L. Cross, University.
 Secretary of History Conference—Miss Lucy E. Elliott, Detroit Eastern.
 Chairman of Physics and Chemistry Conference—W. D. Henderson, University.
 Secretary of Physics and Chemistry Conference—C. L. Herron, Hillsdale.
 Chairman of Mathematical Conference—J. L. Markley, University.
 Secretary of Mathematical Conference—Albertus Darnell, Detroit Central.
 Chairman of Biology Conference—C. E. Barr, Albion.
 Secretary of Biology Conference—W. S. Sayer.*
 Chairman of Commercial Conference—P. R. Cleary, Ypsilanti.
 Secretary of Commercial Conference—D. D. McMillan, Detroit Western.
 Chairman of Physiography Conference—W. H. Hobbs, University.
 Secretary of Physiography Conference—F. W. Frostic, Croswell.
 Chairman of Drawing Conference—Emil Lorch, University.
 Secretary of Drawing Conference—Annie H. Olmstead, State Normal College.

* Deceased.

MICHIGAN INTERSCHOLASTIC ATHLETIC RULES.

Adopted at the 44th meeting of the Michigan Schoolmasters' Club,
 April 2, 1909.

I.

Personal Eligibility.

(a)—Time of Enrollment.

A student, to participate in first semester athletics, must be enrolled before Oct. 1st, and in second semester athletics, before March 1st.

(b)—Age Limit.

A student must be under 21 years of age on Labor Day to compete in first semester athletics, and under 21 years of age on Feb. 1st, to compete in second semester athletics.

(c)—Time Limit of Eligibility.

The number of years a student may compete in interscholastic athletics shall be limited to four. Participation in one interscholastic contest in any branch of athletics shall count as competition for one year in all branches.

(d)—Graduate Rule.

A student becomes ineligible to compete in interscholastic athletics as soon as he has passed the required number of hours to graduate from a four year high school. But the student who passes this required number of hours shall be eligible up to the first day of the following semester.

(e)—Professionalism.

Any student who has used, or is using, his athletic skill, or knowledge of athletics for gain, or, who has competed on any college team, or who has played with, or against professional teams, or who has contested with professional athletes, or who has competed under an assumed name, shall be ineligible for any interscholastic contest.

(f)—Awards.

Any student who accepts a sweater, jersey, or any awards from a high school management, other than those usually given, such as medals, ribbons, letters, etc., shall be ineligible for an interscholastic contest.

II.

School Requirements.*(a)—Current Work.*

A student must have a passing grade in studies requiring at least twelve (12) prepared recitations a week from the beginning of the semester to the time of the contest. And no special recitation or tests shall be given for the purpose of making a student eligible.

(b)—Accredited Work.

A student must have to his credit at least twelve (12) hours of work for each of two semesters preceding the one in which he desires to participate in athletics. By this is meant the last two semesters during any part of which the student was enrolled in a high school. An average of the credits obtained during both semesters shall not be taken, but a deficiency in either, or both, semesters may be made up by the usual methods of the school. A first year student shall be eligible to compete in high school athletics without reference to his standing in the eighth grade; but such a student must have passed in twelve hours' work during his first semester in high school to be eligible the second semester.

(c)—Eligibility Studies.

All academic studies shall count as full time, but all laboratory and shop work, domestic science, music, and drawing, shall count as one-half time, while physical culture and reviews shall not count toward eligibility.

III.

Certification.*(a)—From one school to another.*

A student going from one school to another must present from his last principal a certificate of standing showing his eligibility to compete under these rules.

(b)—Eighth Grade Students.

Students enrolled in the eighth grade and all students who have any eighth grade work to complete either in class or by examination shall be ineligible to compete in high school interscholastic athletics.

(c)—The Student's Written Statement.

A student's written statement that he is eligible under these rules shall be required of every participant in interscholastic athletics. This statement must contain the student's exact age in years, months, and days, and may be used as a basis for a principal's certificate of eligibility under rule I (b), (c), (e) and (f), until evidence of incorrectness is discovered.

(d)—Contracts.

All contesting schools should sign duplicate contracts.

(e)—Certificate of Eligibility.

Certificate of eligibility, signed by the principal, shall be required by the management of the teams before every contest. The following shall be the official certificate of eligibility.

Certificate of Eligibility Michigan Interscholastic Athletics.

The following persons are qualified under the interscholastic rules (1909) to represent.....High School in an interscholastic contest on.....19....

.....Principal.

IV.

Management.*(a)—Of Interscholastic Athletics.*

The final management of all interscholastic athletics shall be in the hands of some member, or members, of the faculty who shall also sign all contracts.

(b)—Local Organization.

The local organization of school athletics shall be in the hands of teachers and students only.

(c)—Controversies.

All controversies shall be settled by the principals and boards of control of the schools concerned, assisted, when necessary, by a third party selected by the principals.

V.

Coaches.

The person responsible for arranging for the immediate training of a team shall be a member of the regular teaching staff of the school.

Coaches, not members of the teaching staff, may be engaged, but they shall have no voice in the management of athletics; and shall confine their attention to athletic instruction.

VI.

Officials.

All officials shall be agreed upon by contesting schools, but such officials shall not include any person connected with the competing schools, unless by special agreement of all schools concerned.

Recommendations of the Committee.

Adopted April 2, 1909.

The committee recommends that there be formed a state organization to be composed of all high schools of the state that will sign an agreement to abide by the laws passed at the meetings of the Schoolmasters' Club, and pay to the secretary of the club an annual fee of one dollar.

It is also recommended that a full schedule of all the schools in this organization shall not be made, but that the different schools make out their own schedule and from such schools in the organizations as they most prefer.

It is further recommended that the schools in this organization shall not play outside of the organization unless the schools with which they play are conforming to the standards of the Michigan Interscholastic Athletic Rules.

W. A. Morse, Chairman.

L. P. Jocelyn, Secretary.

C. G. Wade,

J. J. Schmidt,

Committee.

Upon the request of the Club the Committee has since drawn up the following rule:

VII.

Annual Track and Field Meets.

All annual track and field meets given by the University, or any college or normal school to which the schools of the Michigan Interscholastic Ath-

letic Association send representatives shall be held in accordance with the rules of said association.

Members of the association may accept an invitation to an annual meet providing all schools invited to compete are public high schools.

All controversies arising concerning annual meets, and all interpretation of the rules of the Association shall be referred to a committee composed of the President and Secretary of the Schoolmasters' Club and the chairman of the high school section of the State Teachers' Association.

The following resolution was offered by Prof. F. C. Newcombe and adopted by the Club:

The Michigan Schoolmasters' Club, now in session at Ann Arbor with an attendance of over 1200, learning with regret that House Bill No. 185, pertaining to the treatment of state tax lands, is in jeopardy of defeat in the House, and having confidence in the recommendations of the state commission which has been studying the deplorable condition of the unproductive lands of the state, which recommendations are embodied in House Bill No. 185, wishes hereby to urge the members of our Legislature to regard the great good of the future rather than the small interests of the present, and enact the bill into law.

PROGRAM OF GENERAL SESSIONS

(Admission to *all* meetings of the club by badge or ticket.)

Thursday Morning, April 1

9:00 o'clock.

UNIVERSITY HALL.

1. The Organization of the High School Course in English,
Professor James F. Hosis, Head of English Department,
Chicago Normal School.
2. Some By-Products of the System of Entrance on Certificate,
Professor Frank A. Manny, Western Normal School.
3. The Examining Board and its Functions,
Professor Laura J. Wylie, Head of English Department,
Vassar College, Member of Examining Board.
4. General Discussion.

Thursday Afternoon

4:45 o'clock.

BARBOUR GYMNASIUM.

1. Young Ladies' Classes in Gymnastic Drills.
2. Basket Ball Game.

(Admission by badge or ticket.)

Thursday Evening

8 o'clock.

UNIVERSITY HALL.

Public Address: Evolution,

Professor W. B. Scott, Princeton University.

(This address is under the auspices of the Research Club of the University of Michigan.)

Friday Morning, April 2

8:30 o'clock.

UNIVERSITY HALL.

(Admission to all meetings by badge or ticket.)

BUSINESS MEETING OF GENERAL SESSION.

- (a) Regular Business.
- (b) Report of Committee on New Rules for Interscholastic Athletics.
- (c) A Proposed Scheme for a State Athletic Association.

9:30 o'clock.

LITERARY MEETING OF GENERAL SESSION.

General Topic: The Meaning of Heredity in Education.

1. In how far and in what way is it true that the child is born free?

Dr. George D. Strayer, Professor of Education,
Teachers' College, Columbia University.

2. In how far and in what way is it true that the child is bound by heredity?

Dr. C. B. Davenport, Director of the Long Island Station for Experimental Evolution of the Carnegie Institution of Washington.

3. What special hopes do the facts of heredity offer for education?

Dr. R. M. Wenley, Head of Department of Philosophy, University of Michigan.

4. Open Discussion.

Friday Afternoon

4:45 o'clock.

UNIVERSITY HALL.

Organ Recital—By Mr. Henry W. Church, of the Faculty of the University School of Music.

(Admission twenty-five cents. Free to members of club wearing badges.)

Friday Evening

6:00 o'clock.

BARBOUR GYMNASIUM.

University of Michigan Women's Annual Dinner.

1. Reception of alumnæ and former students by President James B. Angell, University of Michigan.

2. Banquet.

3. Short Talk by President Angell.

(Tickets 75 cents. Persons living outside Ann Arbor should engage their tickets by writing to Mrs. Myra B. Jordan, Women's Dean, University of Michigan, not later than March 31.)

8:00 o'clock.

SARAH CASWELL ANGELL HALL.

The University Junior Play.

(Admission to Play by Dinner Ticket only.)

Friday Evening

8:00 o'clock.

HIGH SCHOOL AUDITORIUM.

Address:—Myths and Legends: Their Moral Value in Education,
Professor Leslie Willis Sprague, Ethical Culture
School, New York.

(Admission by badge or ticket.)

Saturday Morning, April 3

9:00 o'clock.

UNIVERSITY HALL.

SYMPOSIUM

On the Value of Humanistic, particularly Classical, Studies as
a training for Men of Affairs.

1. Brief addresses and letters from the Hon. John W. Foster, Washington, Mr. William Sloane, New York, and other representative men.

Read by President Angell, Professor D'Ooge, and
Professor Drake, of the University of Michigan.

2. Address: The Study of Latin and Greek as a Training for Practical Life,
Charles R. Williams, of the Indianapolis News.

3. Address: The Study of Latin and Greek as a Preparation
for the Study of Science,
Dr. Harvey W. Wiley, Bureau of Chemistry, Department of Agriculture, Washington.

PROGRAM OF CONFERENCES

(Admission by badge or ticket.)

JOINT SESSION OF THE CLASSICAL AND HISTORICAL CONFERENCES

Wednesday Afternoon, March 31

2:15 o'clock, Standard Time.

SARAH CASWELL ANGELL HALL

Presiding Officer: President James B. Angell.

1. The Greek Colonies,
 Arthur L. Cross, University of Michigan.
2. The Rhine and the St. Lawrence and Great Lakes as National Boundaries,
 Francis W. Kelsey, University of Michigan.
3. The Making of Michigan,
 Hon. Clarence M. Burton, Detroit.
4. Peter White as Man and as Citizen,
 Hon. Levi L. Barbour, Detroit.

CLASSICAL CONFERENCE

(Admission by badge or ticket.)

Thursday Afternoon, April 2

1:45 o'clock (Standard Time).

SARAH CASWELL ANGELL HALL

Chairman: Professor F. W. Kelsey, University of Michigan.
Secretary: Professor B. L. D'Ooge, Michigan State Normal College.

Presiding Officer: Professor Joseph H. Drake, University of Michigan.

5. The Survivals of Classical Culture in Russia,*
 Professor Clarence L. Meader, University of Michigan.
6. An Experiment in High School Classical Publication,
 Miss Frances E. Sabin, Oak Park High School, Illinois.

*Illustrated with the stereopticon.

ROUND TABLE DISCUSSION

THE PROBLEMS OF THE HIGH SCHOOL LATIN COURSE.

7. The Aims and Difficulties of First-Year Work,
8. To What Extent may Oral Exercises be profitably used?
9. Requisites for the Successful Teaching of Latin Composition,
10. Interest and Emphasis in the Teaching of Caesar, Cicero, Virgil,

Rev. E. D. Kelly, St. Thomas School, Ann Arbor.

Miss Cecile Gauntlett, High School, Jackson.

Principal John W. Bishop, High School, Pontiac.

Miss Maude A. Isherwood, High School, Grand Haven.

Superintendent Arthur S. Hudson, Big Rapids.

Friday Afternoon, April 2

1:45 (Standard Time).

Presiding Officer: Professor Martin L. D'Ooge, University of Michigan.

11. The Latin Play recently given in the Western High School, Detroit (the scenes reproduced by slides),*
Miss Nellie E. Bancroft and Principal W. A. Morse.
12. Omina Plautina,
Professor Samuel Grant Oliphant, Olivet College.
13. Problems of Elementary Greek,
Professor George A. Williams, Kalamazoo College.
14. Some Questions of Religion and Morality in the Latin Authors of the High School Course,
Professor Frank B. Meyer, Hope College.
15. Certain Romantic Elements in the Odessey,
Professor Campbell Bonner, University of Michigan.
16. The Coptic Manuscript brought from Egypt in 1908 by Mr. Charles L. Freer,*
Dr. William H. Worrell, University of Michigan.
17. The Materials, and Place of Writing, of the Greek Biblical Manuscripts in the Freer Collection,*
Professor Henry A. Sanders, University of Michigan.

*Illustrated with the stereopticon.

ENGLISH CONFERENCE

(Admission by badge or ticket.)

Friday Afternoon, April 2

ROOM C-3, HIGH SCHOOL.

- Chairman: Mrs. Cornelia Steketee Hulst, Grand Rapids.
 Secretary: Miss Sara Whedon, Ann Arbor.
- I. Aids in Teaching English Literature, especially Photographs,
Miss Anna D. Clarke, Kalamazoo.
 - II. Exhibits of Material, Note Books, Pictures, and other special
devices, with short talks on Methods. An experience
meeting.

MODERN LANGUAGE CONFERENCE

(Admission by badge or ticket.)

Wednesday Afternoon, March 31

2:00 o'clock.

ROOM G, UNIVERSITY HALL.

- Chairman: Professor A. G. Canfield, University of Michigan.
 Secretary: Miss Emelia Hochstein, Kalamazoo.
1. What I saw in the German Public Schools,
Professor Clyde R. Ford, Michigan Normal School.
 2. The Influence of German on English,
Professor S. B. Harvey, Hillsdale College.
 3. The Beginnings of French Literature,
Professor Raymond Weeks, University of Illinois.

Thursday Afternoon. April 1

2:00 o'clock.

ROOM G, UNIVERSITY HALL.

- Chairman: Professor S. B. Harvey, Hillsdale College.
4. How far should the Study of French in the High School
aim to Feed and Develop the Aesthetic and Literary
Sense?
Mrs. Helen Farrand Naumann, Port Huron High
School.
 5. What Texts should be read in the First two Years of High
School French?
Miss Ethel M. Gregg, Detroit Central High School.
Discussion led by Mr. William H. Fries, Detroit Uni-
versity School.
 6. The Presentation of French in the American Secondary
School,
Miss Nellie L. La Vigne, Escanaba High School.

Friday Afternoon, April 2

2:00 o'clock.

ROOM G, UNIVERSITY HALL.

- Chairman: Professor Max Winkler, University of Michigan.
7. The Study of German as a Means of training the Imagination,
Professor Justin H. Bacon, Kalamazoo College.
8. Early Appreciation of Goethe's Faust in England,
Dr. William F. Hanhart, University of Michigan.
9. The Practical Value of Phonetics in Teaching Elementary
German,
Miss Emily Flintermann, Cass High School, Detroit.
10. Some Problems in Teaching German Literature in the High
School,
Miss Dorothy M. Fuerstenau, Sagniaw High School.

CONFERENCE OF PHYSICS AND CHEMISTRY

(Admission by badge or ticket.)

Thursday Afternoon, April 1

1:30 o'clock.

PHYSICAL LABORATORY, WEST LECTURE ROOM.

Chairman: Professor W. D. Henderson, University of Michigan.

Chairman Chemistry Section: Professor M. A. Cobb, Central
Normal.

Secretary: Mr. De Forest Ross, Ypsilanti.

1. High School Physics, from the View Point of the Superintendent,
Superintendent C. H. Carrick, Charlotte.
2. The Relation of Physics to other High School Studies,
Miss Loa Green, Big Rapids.
3. Definitions of Chemical Energy, Affinity and Valence,
Professor S. L. Bigelow, University of Michigan.
4. Rectifying Alternating Currents for Laboratory Purposes,
Professor F. R. Gorton, State Normal College.
5. Some Fundamental Definitions. General Discussion.

Friday Afternoon, April 2

1:30 o'clock.

PHYSICAL LABORATORY, WEST LECTURE ROOM.

1. How to Make the Teaching of Chemistry More Efficient,
Professor F. S. Kedzie, Michigan Agricultural College.
2. The Structure of the Atom in the Light of the Electron Theory,
Dr. J. Kunz, University of Michigan.
3. The Packard Falling Body Machine,
Mr. L. V. Mann, Detroit.
4. The Disciplinary Value of the Physical Sciences,
Professor Delos Fall, Albion College.
5. Business.

MATHEMATICAL CONFERENCE

(Admission by badge or ticket.)

Friday Afternoon, April 2

TAPPAN HALL.

1:45 o'clock.

- Chairman: Professor J. L. Markley, University of Michigan.
 Secretary: Mr. Albertus Darnell, Detroit Central High School.
1. Discussion: What should Colleges expect from the High School in Mathematical Training?
Associate Dean Butts, Engineering Department University of Michigan.
 2. Paper: The Future of Mathematics,
Professor G. A. Miller, University of Illinois.
 3. Discussion: The Concrete in the Teaching of Mathematics;
to what extent and how presented?
Principal Webster H. Pearce, Adrian.

HISTORY CONFERENCE

(Admission by badge or ticket.)

Thursday Afternoon

1:45 o'clock.

ROOM B, LAW BUILDING.

- Chairman: Professor Arthur L. Cross, University of Michigan.
 Secretary: Mildred Hinsdale, Grand Rapids.

General Subject: Correlation in Historical Teaching in the Schools.

1. Some Practical Considerations of the Report of the Committee of Eight on Teaching of History in Schools,
Mr. J. F. Thomas, Washington Normal School, Detroit.
Miss Aleida J. Pieters, Pontiac.
2. Points of Emphasis in the Imperial Period of Roman History,
Dr. F. B. Marsh, University of Michigan.
3. Ancient History and its Relation to the Present,
Miss Lucy Elliott, Eastern High School, Detroit.
4. Points of Contact between English and American History,
Miss Lula B. Southmayd, Central High School, Detroit.
5. Discussion.

Friday Afternoon

1:45 o'clock.

ROOM B, LAW BUILDING.

Chairman: Professor Arthur L. Cross, University of Michigan.

General Subject: The Place of Legal and Constitutional Questions in the Teaching of History in Schools.

1. How far may Constitutional and Legal Problems be Emphasized in History Teaching?
Superintendent L. A. Chase, Coloma.
2. English Law as an Exponent of English History,
Professor E. R. Sunderland, University of Michigan.
3. The Legal Basis of American History,
Professor F. L. Paxson, University of Michigan.
4. The Constitutional Side of High School History,
Miss Elsie E. Cooper, Charlotte.
5. Constitutional History as Subject Matter in High School Courses,
Mr. G. G. Bechtel, Central High School, Detroit.
6. Discussion.

JOINT MEETING BIOLOGICAL CONFERENCE AND SCIENCE TEACHING

(Admission by badge or ticket.)

Friday Afternoon, April 2
2:00 o'clock.

HIGH SCHOOL AUDITORIUM.

Chairman: Professor S. D. Magers, State Normal College.

Secretary: Miss Mary A. Goddard, State Normal College.
General Topic: The Effect of the Darwinian Doctrines:

1. On Biology,
Professor C. B. Davenport, Carnegie Institution,
Washington.
2. On Psychology,
Professor N. A. Harvey, State Normal College.
3. On Education,
President E. G. Lancaster, Olivet College.
4. On Religion,
Rev. Carl S. Patton, Congregational Church, Ann Arbor.

COMMERCIAL CONFERENCE

(Admission by badge or ticket.)

Friday Afternoon, April 2

1:30 o'clock.

HIGH SCHOOL.

Chairman: D. W. Springer, Ann Arbor High School.

Secretary: Miss Gertrude O. Hunnicutt, Lansing Business University.

1. Some Observations of Commercial Teaching in England,
Mr. J. Remsen Bishop, Principal Eastern High School,
Detroit.
2. The Study and Practice of Accountancy,
Mr. R. J. Bennett, Principal Detroit Business University.
3. Entrance Requirements for Business Colleges,
Miss Gertrude Hunnicutt, Lansing Business University.
4. The Development of Character,
Mr. Arthur H. Holmes, Director Commercial Department Grand Rapids High School.

Saturday Morning, April 3

8:30 o'clock.

1. Should the University Place Such Subjects as Political Economy, Commercial Geography, History of Industry, Commercial Law, Bookkeeping and Shorthand upon the List of Electives from which Entrance Credits may be Chosen?
Professor John O. Reed, Dean of the Literary Department, University of Michigan.

2. Discussion,
Mr. D. W. Springer, Ann Arbor High School.
3. Business Ethics,
Mr. Jason E. Hammond, Ex-Supt. Public Instruction, Lansing, Mich.
4. What the Employer Expects of the Stenographer,
Mr. W. A. Taylor, Correspondence Department, Park, Davis & Co., Detroit, Mich.

DRAWING CONFERENCE

(Admission by badge or ticket.)

Thursday Afternoon, April 1

2:00 o'clock.

ROOM 32, TOP FLOOR, OLD ENGINEERING BUILDING.

Chairman: Professor Emil Lorch, University of Michigan.
Secretary: Professor C. S. Denison, University of Michigan.

1. Art and Education,
Professor Emil Lorch, University of Michigan.
2. International Congress of Art, held at London, England 1908,
Mrs. Anne Batchellor, Olivet College.
3. Work in Composition in the Normal School,
Annie H. Olmsted, State Normal College.

PHYSIOGRAPHY CONFERENCE

(Admission by badge or ticket.)

Wednesday Afternoon, March 31

1:30 o'clock.

MUSEUM LECTURE ROOM.

Chairman: Professor William H. Hobbs, University of Michigan.
Secretary: Professor William H. Sherzer, State Normal College.
Symposium on the teaching of physiography in the high school.

1. How much Time should be Given to Physiography in our High Schools?
Superintendent F. E. Howard, Manchester.
2. Discussion of paper,
Superintendent E. R. Washburn, Dexter.
3. Is the elimination of Geology from the High School Course Advisable?
Superintendent William E. Gould, Pinconning.

4. Discussion of the paper,
Professor R. D. Calkins, Mt. Pleasant.
5. What Should be Taught in a Year's High School Course in
Physiography?
Professor William H. Hobbs, University of Michigan.
6. Discussion of the paper,
Professor Jesse J. Myers, Michigan Agricultural Col-
lege.
Miss Bernice L. Haug, Central High School, Detroit.
7. Some Phases of Field Geography in the High School,
Principal F. W. Frostie, Croswell.
8. Discussion of the paper,
Professor E. C. Case, University of Michigan.
9. What should be the Training of Teachers of Physical Geog-
raphy for the Secondary Schools?
Mr. I. D. Scott, University of Michigan.

Members of the Schoolmasters' Club

Life Members

Denison, Walter

Kelsey, Francis W.

Members for Three or More Consecutive Years

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Breed, Gertrude

Chute, H. N.

Essery, E. E.

Hawkes, W. H.

Jocelyn, L. P.

Montgomery, Jabez

Porter Alice

Slauson, H. M.

Springer, D. W.

Sturgis, Martha

Whedon, Sara

Wines, L. D.

BAY CITY

Ackerman, Emma C.

Gates, E. L.

Swain, G. R.

Sharpe, E. M.

Stewart, J. A.

Taylor, Harriet

BATTLE CREEK

Coburn, W. G.

Hickey, T. P.

BENTON HARBOR

Wright, W. R.

BIG RAPIDS

Green, Loa

BIRMINGHAM

Dudley, S. M.

CASSOPOLIS

Brown, J. W. C.

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Larzelere, C. S.

CHELSEA

Gallup, E. E.

CHICAGO, ILL.

Halsey, L. R.

Lobaugh, E. D.

Nutt, H. D.

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Cleary, P. R.

COLDWATER

McElroy, E. M.

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Highley, A. M.

Thomas, J. F.

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Cooke, C. S.

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Bromley, Lillian M.

Bates, F. O.

Conover, L. Lenore

Copeland, Cornelia V.

Darnell, Albertus

Gee, E. F.

Hill, Grace

Hull, Isabella H.

Irwin, F. C.

Jones, A. F.

Mackenzie, David

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Kimball, Edith M.

Miner, Mary L.

Pettie, Edith E.

Struble, R. H.

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Courtis, S. A.

DET., McMILLEN

Wagner, T. E.

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Milner, Florence

Searle, F. E.

Bliss, F. L.

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McMillen, D. W.

Morse, W. A.

Phelps, Nancy

DEXTER

Washburn, E. R.

FENTON

Sexton, J. W.

FLINT

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Gold, Mary E. S.

Wade, C. J.

GAYLORD

Curtis, G. H.

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Greeson, W. A.

Hulst, Corenia S.

Jennings, Albert

Stearns, Frances L.

GREENVILLE

Katen, Isabelle

HASTINGS

Allison, Clara J.

HILSDALE COL.

Herron, C. L.

Mauck, J. W.

HOLLAND

Bishop, W. R. T.

HOWELL

Fullerton, Fred

Sharpe, E. Alma

HOPE COLLEGE

Godfrey, A. T.

Krell, Carrie

Nykerk, J. B.

JACKSON

Marsh, E. O.

KALAMAZOO

Blackman, Elma M.

Gould, R. R. N.

Gregg, Jessie S.

Hartwell, S. O.

Hochstein, Emilia

KALAMAZOO COL.

Praeger, W. E.

Williams, G. A.

Williams, C. B.

LANSING

Atkins, Edith E.

Pattengill, H. R.

Wright, L. L.

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McAlpine, R. K.	Head, Roy S.	Cross, A. L.
MANCHESTER	PONTIAC	Dennison, Walter
Kirchhoffer, Marie	Godfrey, Effie	Diekhoff, Tobias
MONROE	McCarroll, Sarah	Dow, E. W.
Gilday, Selma	Travis, Ora	Finney, B. A.
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Everett, J. P.	Crane, Mrs. S. A.	Hobbs, W. H.
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Buell, Bertha G.	Lewis, W. F.	Kelsey, F. W.
D'Ooge, B. L.	Schmitt, J. J.	Lichty, D. M.
Ford, R. C.	PLYMOUTH	Markley, J. L.
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Jones, I. H.	SAGINAW	Mellencamp, F. J.
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Roberts, D. H.	Righter, L. E.	Tilley, M. P.
Strong, E. A.	ST. LOUIS	Whitney, A. S.
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Lee, L. B.	SEATTLE, WASH.	Ziwei, Alex.
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Lancaster, E. G.	SEATTLE, WASH. U.	Burnham, Ernest
Smith, N. F.	Osborn, F. A.	Waldo, D. B.
ORCHARD LAKE	UNIVERSITY	YPSILANTI
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OTSEGO	Beman, W. W.	Ross, DeForest
Longman, M. W.	Bohn, W. E.	

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Olliver, L.	Root, C. C.	Gates, E. L.
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Bennett, Ella	Walsh, May	Reed, H. E.
Breed, Gertrude	Whedon, Sara	Reid, Mabel
Chute, H. N.	Wines, L. D.	Schroeder, Mathilde
Essery, E. E.	ANN ARBOR,	Sharpe, E. M.
Goodell, Maude	ST. THOMAS	Stewart, J. A.
Hawkes, W. H.	Magdalene, Sister M.	Swain, G. R.
Hollands, Sarah		Taylor, Harriet L.

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211

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BENTON HARBOR	Johnson, H. M.	Mackenzie, David
Dowman, C. H.	Lobaugh, E. D.	Miller, E. L.
Wright, W. R.	Miner, R. S.	Mutschel, M.
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Abell, E. L.	Taber, C. W.	Roby, A. M.
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Smith, Mabel M.	Martiny, Clara	Jackson, V. M.
Walker, Emily L.	McElroy, E. M.	Kimball, Edith M.
BLISSFIELD	COLOMA	McSweeney, Amelia
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BLOOMINGDALE	CROSSWELL	O'Dea, Harriet
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Cobb, M. A.	Bowerman, C. B.	Cooper, L. G.
Kelley, John	Bromley, Lillian M.	Fitch, J. E.
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Depew, Elizabeth	Gregg, Ethel	Taylor, Carrie L.
Gallup, E. E.	Hard, Helen	Waples, Marcia
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Burr, E. J.	Kelloy, J. E.	Rivett, B. J.
Hall, D. W.	Lewrenz, Carrie M.	DETROIT WESTERN
		Alley, Sadie M.

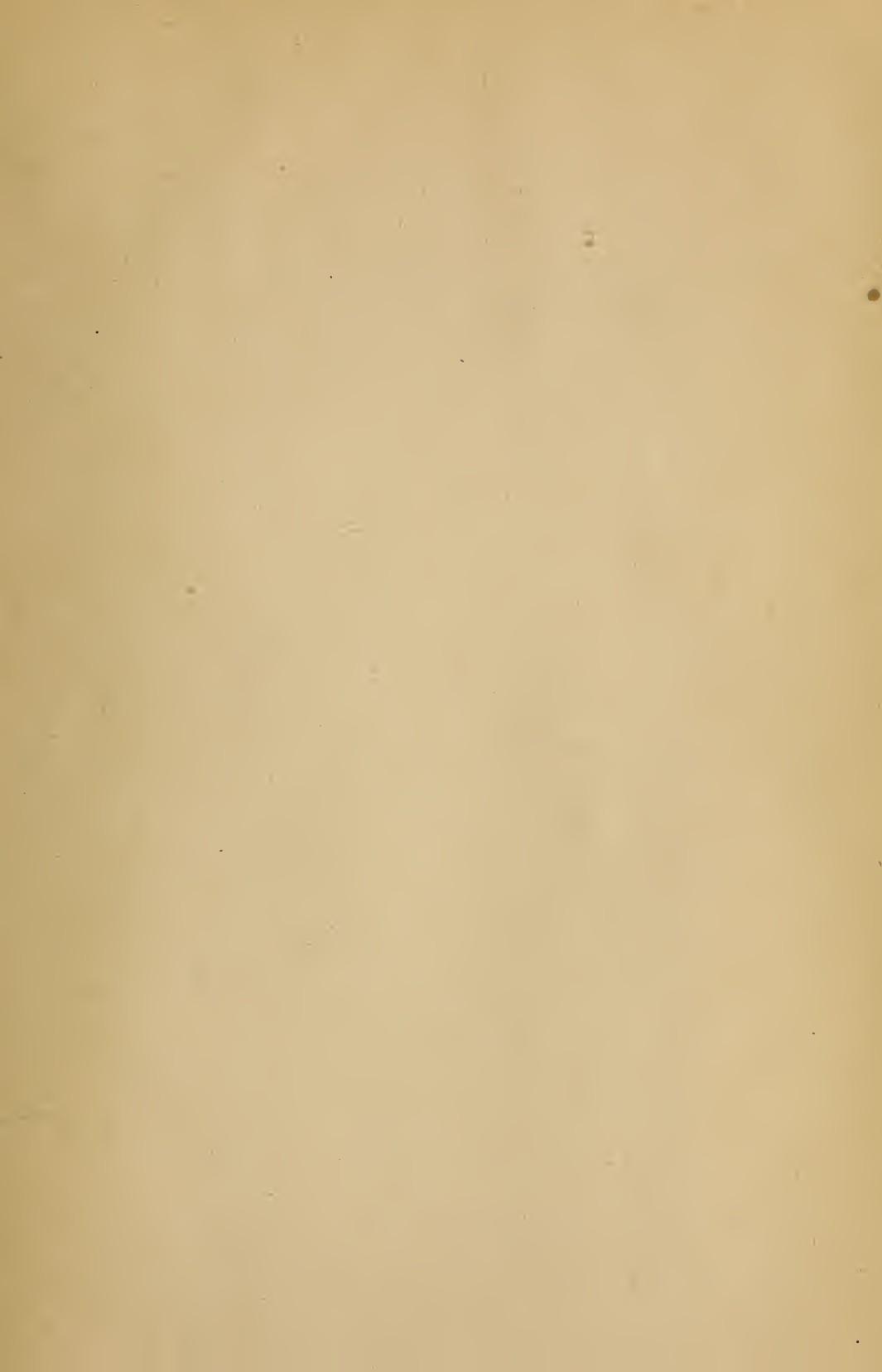
MICHIGAN SCHOOLMASTERS' CLUB

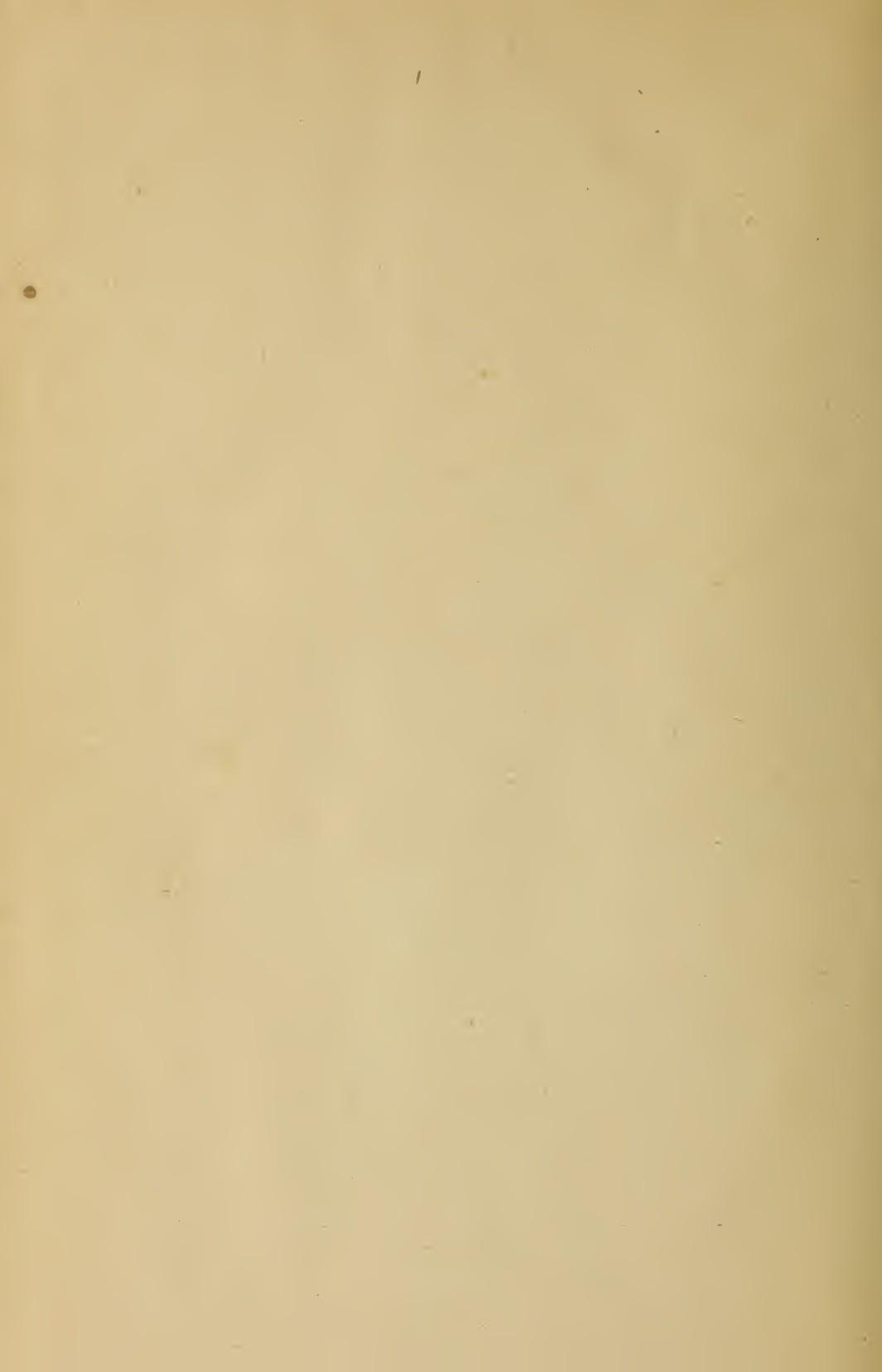
Bancroft, Nellie E.	GENESEE, N. Y.	Clark, Annie D.
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Wilkinson, A. O.	James, Alice	LAFAYETTE, IND.
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	Gauntlet, Cecil	
	Marsh, E. O.	
	KALAMAZOO	
	Blackman, Elma	

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LaFurge, Chas.	Deyoe, F. E.	Walling, W. L.
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Buell, Bertha G.	Head, R. S.	Forsythe, L. L.
Burton, Fannie C.	Streater, Bessie	Talcott, Mabel H.
Clark, S. B.	PENTWATER	ST. JOHNS
Dixon, Edith D.	Toothacker, W. S.	Daboll, Winifred C.
D'Ooge, B. L.	PINCONNING	TAWAS CITY
Downing, Estelle	Gould, W. E.	Valentine, M. E.
Ford, R. C.	PLATTEVILLE, WIS.	THREE RIVERS
Fuller, Grace	Reynolds, E. P.	Tyler, L. L.
Goddard, Mary A.	PLYMOUTH	TOLEDO, OHIO
Gorton, F. R.	Isbell, W. N.	Barkdull, E.
Harvey, N. A.	PONTIAC	Canniff, Maud
Jones, L. H.	Bishop, J. W.	Commager, A.
King, Julia A.	Godfrey, Effie	Fenneberg, Emma
Laird, S. B.	McCarroll, Sarah	Hanson, Myra H.
Lathers, J. S.	Pieters, Aleida J.	Holt, W. P.
Lombard, Mary J.	Travis, Ora	Refior, Sophie
Loomis, L. Etta	PORT AUSTIN	Stremper, H.
Lyman, E. A.	DeGreene, A. L.	TRENTON
Magers, S. D.	PORT HURON	Clawson, Edith J.
Muir, Helen B.	Broomhall, Anna	UPPER ALTON, ILL.
Matteson, Jennie L.	Chapin, Alice B.	Lake, E. S.
Norris, O. O.	Crane, Mrs. S. A.	UNIVERSITY
Norton, Ada A.	Davis, H. A.	Angell, J. B.
Peet, B. W.	Easton, A. J.	Beman, W. W.
Phelps, Jessie	Fyan, Lila	Berry, C. S.
Roberts, D. H.	Lewis, W. F.	Bigelow, S. L.
Sherzer, W. H.	McFadzean, Kate	Bradshaw, J. W.
Strong, E. A.	Neuman, Helen F.	Bohn, W. E.
Wilber, H. Z.	Schmitt, J. J.	Bonner, Campbell
NORTHVILLE	RENSSELAER, IND.	Bursley, P. E.
Goodrich, Edith	Stockbridge, Margaret	Butts, W. H.
Hornberger, J. J.	RICHMOND	Canfield, A. G.
Stearns, Virginia	Watkins, Agnes	Carhart, H. S.
OAK PARK, ILL.	ROCHESTER	Castle, E. W.
Lee, L. B.	Wheaton, F. W.	Crittenden, A. R.
Sabin, Frances E.	ROMEO	Cross, A. L.
OLIVET COLLEGE	Marshall, J. J.	Denison, C. S.
Lancaster, E. G.	SAGINAW	Dennison, Walter
Oliphant, S. G.	Bowen, Florence	Diekhoff, Tobias
Smith, N. F.	Bricker, J. I.	D'Ooge, M. L.
ORCHARD LAKE	Fuerstenau, Dorothy	Dow, E. W.
Hull, L. C.	Goldstone, Bertha	Drake, J. H.
OSCODA	Nelson, Lelia	Effinger, J. R.
Gibb, H. L.	Thomas, Lawrence	Finney, B. A.
OSHKOSH, WIS.	Warner, W. W.	Fishleigh, W. T.
Weed, C. R.	Warriner, E. C.	Ford, W. B.
OTSEGO	Whitney, W. L.	Garretson, W. V.
Longman, M. W.		Glover, James

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King, Irving	Scott, I. D.	YPSILANTI
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